AMATEUR RADIO

VOL 51, NO 12, DECEMBER 1983
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Merry Christmas to all

Advanced Electronic Applications Computer Potch™ Interface CP-1

Now you can easily convert your personal computer and transceiver into a full function RTTY station with the new CP-1 Computer Patch¹¹ interface by AEA and appropriate AEA software and cabling. The CP-1 is a professional quality RTTY/CW terminal which cuts no corners on sensitivity, selectivity, and reliability. Software packages include split screen operation and large type-ahead and message (prag) buffers at all the common RTTY and CW speeds.



The CP-1 Computer Patch, TM is easy for an inexperience RTIY operator to hook up and operate, but will still appeal to the more experienced and sophisticate RTIY user. The CP-1 is a moderately priced, high performance, feature packed unit, which utilizes reliable innovative design in the style you have come to expect from Advanced Electronic Applications. It is priced competitively with other popular units, but includes many exires not offered by them.

With the tremendous price drop in personal computers, your fold system cost is far below that of dedicated RTTY/CW systems which other few. if any, additional teatures. No computer programming knowledge is required to use the CP-1 with your computer and you will still have the opportunity to use your personal computer and computer and computer and computer and computer and computer for α variety of unrelated functions.

The CP-1 demodulator provides greatly improved performance compared to popular single channel RTTY detectors. An easy to use AEA magic-eye bargraph tuning indicator gives the closest thing to scope tuning, but separate Mark's Space scope output jacks are also provided. A state-ot-the-art multi-usage active filter more protected and per and post multi-other many per and post multi-other m

Additionally, the CP-1 offers a variable receiver shift capability for any shift from 100 to 1000 Hz with a NORMAL/REVERSE tone selector switch on the front panel.

A function generator chip is utilized for clean, stable sine wave AFSK tone output to the



transmitter. Both pius (+) and minus (-) keyed output jacks are provided for CVW keying of virtually any popular transceiver. Automatic transmit proceive switching is available under computer control or from a front panel manual transmit button. Output and computer control sgnals are available in the usual TTL levels (or RS-232 kift) with an optional low cost RS-232 kift).

Power requirement for the CP-1 is 16 VAC. The CP-1 Computer Patch™ is housed in an attractive all-metal enclosure with extensive R.F. filtering for minimal R.F. susceptibility or radiation, far exceeding Part 15, subpart J. FCC requirements. The CP-1 measures 10" wide x 29½" x 8½" deep and weighs approximately 1½ pounds.



Computer Patch CP-1 CP-1 240/12VAC Power Supply Software—VIC-20 (RTTY only) Apple (RTTY-CW-ASCII)

VIC-20 (RTTY-CW-ASCII) Commmodore 64 (RTTY-CW-ASCII) \$42 plus P&P \$55 plus P&P \$123 plus P&P \$123 plus P&P

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No! It isn't Nipper but Timbo the second op at VK5QV. See article page 13.

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DEADLINE

All conv for February AR must arrive at PO Box 300, Caulfield South, Vic 3162 at the latest by the 3rd January, 1983.

DRAFTING GEORGE BROOKS LIZZ KLINE

BUSINESS MANAGER & SECRETARY REG MACEY

ADVERTISING MANAGER

JOHN J A HILL Warnhar of Fuhlications Committee VK3W7

Enquiries and material to: The Editor

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Seddes Street, Mulgrave, 3170 Tel.: (03) 560 5111 AMATEUR RADIO, December 1983 - Page 1







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THE ONLY SCANNER THAT GOES 26-88, 108-180 & 380-514 MHz

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Frequency Range: a) 26-57.995 MHz Space ... 5 kHz 58-88 MHz 12 5 LM-Space. Space 5 kHz 380-514 MHz 12.5 kHz Sensitivity 26-180 MH+ 0.4-V S.N 12 4B b) 380-514 MHz 1.0uV S/N 12 dB

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210 (W) x 75 (H) x 235 (D) mm Dimensions 8-1/4 (W) x 3-1/4 (H) x 9-1/8 (D) In 2.8 Kgs Weight:

Clock Error Within 10 sec month Memory Cha 16 Channala

Scan Rate 8 Channels/sec Fast 4 Channels sec Seek Rate: 10 Channels/sec 5 Channels/sec Scan Delau: 0. 3 or 4 seconds

Audio Output: 2 Watts M Ant Impedance: 50-75 ohm Whip or External A

LO/DX Control (20 dB ATT.) 26-180 MHz ... Within 300 Hz Freq. Stability: 380.514 MH-Within I KHz

The Jil. SX-200 represents the latest STATE-OF-THE-ART technology in the development of Scanning Monitor Receivers. It has many features that previous have not been available on receivers of its

For example the tremendous frequency coverage, which encompasses all of the following bands:- HF & UHF CB, 27 & 155MHz MARINE. Australian LOW BAND, AIRCRAFT band, VHF SATELLITE band, 10Mx, 6Mx, 2Mx and 70CMx AMATEUR, VHF HIGH BAND and UHF TWO-WAY band - as well as many others. Other features include detection of AM or FM on all bands, Squelch Circuitry that can be used to LOCK OUT carrier only signals, Fine Tuning control for off channel stations, 240 VAC plus 12VDC operation. Squelch Operated Output that may be used to trigger a tape recorder or channel occupancy counter and accurate Quartz Clock



JIL SX-200 A BETTER SCANNING MONITOR RECEIVER

HIGH QUALITY AND PERFORMANCE

III. have designed the SX-200 as a high quality, high performace programmable scanning receiver at a realistic price, design criteria which are not born in many other receivers of its type.

MECHANICALLY RUGGED

The IIL SX-200 is ruggedly built using EPOXY-GLASS printed circuit board and double sided through hole plating techniques. Easy access and servicability is maintained throughout its design.

4 BIT MICROPROCESSOR WITH ONBOARD ROM AND RAM

A powerful 4 Bit PMOS Microprocessor, the uPD553, is used as a controller in the SX-200. Its features include 2000 x 8 ROM and 96 x 4 RAM onboard as well as up to 80 instructions with a 3 level subroutine stack.

EXTREMELY LOW SPURIOUS COUNT

Even though the SX-200 covers over 33.000 Channels JfL, through careful design, have been able to reduce the number of internally generated spurious signals to an extremely low level. Not the case in most other scanning receivers.



FULLY TRACKED RF AMPLIFIERS

The SN-200 makes use of 3 separate RP Amplifier Stages. They are divided into 6 bands, each band having its own electronically switched coils which are fully tracked with the receiver frequency using Varicap Diodes. Maximum performance is thus gained over the entire operating range of the set.

ACCESSORIES

■ EXP-32 KIT

Increase the memories of your SX-200 to 32 with this memory expander kil \$53 + \$2 P & P

■ A4-AM KIT

Provides automatic AM operation on the 27 MHz CB MARINE and AIRCRAFT bands. \$32 + \$2 P & P

■CVR-1B CONVERTER allows your SX-200 to cover 180 to 380

MHz (Incl. SPACE SHUTTLE frequencies) \$199 + \$5 P & P

■CVR-2 CONVERTER

allows your SX-200 to cover the SHORT WAVE bands, 0.55 to 30 MHz. \$189 + \$5 P & P

■ MFJ-332 VLF CONVERTER

allows your SX-200 to cover 5 KHz to 1600 HKz \$144 + \$5 P&P

SX-200, RUGGED CONSTRUCTION AND EASY SERVICABILITY.

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CWR-685E are:

Send and receive ASCII, Baudot, and Morse code.
 RTTY and Morse demodulators are built-in.
 RTTY speeds of 45, 80, 87, 74, 110, and 300 Baud

. High or Low RTTY tones. . Send and receive CW at 3 to 40 WPM . Built-ta 6 toch green CRT display.

· Four page video screen display. Six programmable HERE IS messages Pretype up to 15 lines of text · External keyboard included

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AZDEN the FM KING PCS-4000



COMPARIS TINY SIZE: Only 2" H x 5.5" W x 6.6" D. COMPARE!

· MICROCOMPUTER CONTROL. At the forefront of tech UP TO 8 NON-STANDARD SPLITS Ultimate versatility for

CAPMARS, COMPARE! 16-CHANNEL MEMORY IN TWO 8-CHANNEL BANKS

Retains frequency and standard offset. Paracong. classes:

DUAL MEMORY SCAN. Scan memory bunks either separately or together. COMPARE TWO RANGES OF PROGRAMMABLE BAND SCAN NING: Units are quickly reset. Scan the two segments either

arately or together. COMPARE! FREE AND VACANT SCAN MODES: Free scanning stops. 5 seconds on a busy channel. Vacant scanning stops on

DISCRIMINATOR SCAN CENTRING (AZDEN EXCLUS

TVE PATIENT') Always stops on frequency.

TWO PRIORITY MEMORIES: Either may be instantly recolled at one time: COMPARE

PCS-300 - The Standard For Comparison \$359

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e 8 MHz Covernor Ideal size and weight distribution. · LCD Display with timed lamp 16 Key Autopatch · PL Tone Switch

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Busy and vacant sout modes · Kerbourt lock Tennamir lock · Digital S/RF and memory address meter

· High or low power A True EM Automatic front end tuning Rupred commercial-grade modular con-

· Superior receiver · BNC Antenna connector WE ARE AUTHORISED

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JRC:JST-100 Only After You Have Seen Everything Else -Come and See the Fantastic JST!

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81745

The JRC Model JST-100 HF transceiver is a new digitally synthesized, microcomputer based transmitterfreeziver. It incomputes an 11-channel memory and two distilal variable frequency oscillators, allowing various types of operati amateur bands in the emission modes of A3J, A1 and F1. The JST-100 is designed for compact and lightweight construction and case of operation.

GO SSTV with the New Stock... ALINCO EC-720

Solid State - Send and Receive clear pictures - Write for Specs.

Only 8799

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889

EMB-1, the professionally made noise bridge for all kinds of RF EMB-1, the best investment in your shack?

Adjustments of single and multi-based dipole, inverted vec, beam, vertical, mobile white or random system for standards

Range extender, expanded capacitance range (180pF) Other uses: tune untenna tuners, adjust tuned circuits, mensure inductance, capacitance, RF impedance, baluns, trunsformers, electrical circuits, velocity factor, impedance of coux.

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This is the top-of-the-line HAL combination for the serious RTTY enthusiast. It is composed of the MPT3100, ST6000, DSR3100, and optional printer: HAL can supply cable set C-1 to connect this system to your transcriver. Put System 1 your shack for the finest to RTTY operation. The ARQ1000

ny be added for use in AMTOR or ARQ applications This is the attractive and versatile CT2200 system from HAL same of the minescene and versame c. 1 group system from HAL.
which includes the ARQLOOD, KB210 monitor,
ISSB100, and optional printer. This combination offers a
unique set of features at a reasonable price for the radio amount or absorbance earlination. Cable set C-2 interfaces this system

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WRITE, PHONE OR CALL IN!



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Besides our extensive range of SWL Accessories, such as Active Audio Filters, Pre-selectors, Active Antennas, etc., we ALSO carry Antenna Tuners for Shortwave and Communications Receivers to improve the reception and efficiency of your receiving system.

MIZUHO: SX-3 PRE-SELECTOR



IS YOUR RECEIVER OR TRANSCRIVER DEAF? THEN THE ONLY SOLUTION IS THE "SX-3" - AN 18dB PRE-AMPLIFIER

NOW YOU CAN RECEIVE: CW, RTTY, ASCII, TOR, SITOR, AMTOR WITH THE NEW INFOTECH-M600A



RECEIVER

82350



MIZUHO: KX-3 R x ANT, TUNER



prove your reception. And increase the sensitivity of your system.

SPECIAL FOR SWL-THE NEW TELEREADER CWR 670 E 8465



The compact, multi-mode CWR-670E Receiver operates conveniently with display and/or printing equipment. JRC-NRD 515 COMM.

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ACTIVE RECEIVING ANTENNAS MODELS 270 & 370

ULTRA-COMPACT RECEIVING ANTENNA SYSTEMS GIVING WIDEBAND COVER-AGE FROM 200kHz to 30MHz AT HIGH SENSTITYTTY.

THE ECONOMY SWL CODE CONVERTER-TELEREADER CWR 610 E

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receives CW/RTTY/ASCII code.

ICOM-R70 COMM. RECEIVER



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AUTO AUDIO NOTCH FILTER 8189 Plus CW filter. Clears tune-up whistle from

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Full passband tuning (PBT). New! NB7A Notse Blanker supplied as standard KENWOOD-R2000 COMM.

RECEIVER 5650 SSB, CW, AM, FM, digital VFO'S, 10 mem-

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ories, memory and band scan, dual 24-hour

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233 EMTRON EBL 2000 4:1, 2000W for ant. b,mera DUMMY LOADS TOYO T25, 25W, 200MHz 510 TOYO T100, 100W, 200MHz . TOYO T200, 200W, 200MHz .

WELZCTISA, 15W, 450MHz WELZ CT15N, 15W, 450MHz

WEI Z CT150, 150W, 450MHz WELZ CT900 300W 250MHz ANTENNA ROTATORS KR-250 light duty rotator ... **** KR-400 medium duty rotator \$149 KR-600RC medium duty rotato \$259 KR-2000RC heavy duty rotator KR.500 elevation rotators \$195 KR-050 stay bearing ... \$39 SWR & POWER METERS SP.300 SP-350 POA SP.15

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\$185 + \$8.50 Post \$68 a \$6 50 Post \$104 + \$8.50 Post SP-250 CORD A CE SO Dred

\$31 + \$4 Proj SW-151D \$100 4 68 50 Prof CN-520 . \$79 + \$4 Pos \$89 + \$4 Pos CN-550 \$109 + \$6 Pos . \$185 + \$6 Post COAXIAL SWITCHES TOYOSA-450, 2006, 2kW, 500MHz WELZ CH-20A, 2pos, 2kW, 900 MHs WELZ CH-20N, 2pos, 2kW, 1300MHz \$50 DANNA CS-201 2004 26W 500MHz DARWA CS-401, 4pos, 2kW, 500MHz.

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81795

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The very latest auto coupler for your 757. Great for mobile & contest use - you can almost work into a piece of wet string! Cat D-2942

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Run your transceiver via your micro. Allows external control of

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It's the absolute latest state-of-the-art in design - in fact, its CAD/CAM (computer aided design, computer aided manufacture) ensures unbelievable standards of reliability.

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All mode - including FM with no optional extras All HF bands from 160 to 10m including

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Tiny 238 x 93 x 238mm (smaller than some 2m rigs!

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- Dick Smith Electronics: Australia's largest supplier and Yaesu factory approved distributor and service centre.
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SPECIFICATIONS No. of Channels Mode of Operat

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to Dick Smith

Electronics

In Chan Reject Fransmilter Power Output pu ious Emiss an 6048

OPTIONS AVAILABLE Upgrade Kit (C | K 630 Repu ter S meter idd **DRLY 184.50**

UHF Antenna Kit

lust for your UHF transceiver deluxe gutter gripper base, UHF co-as and whip with cutting details. Also

ultable for UHF CE Cat D-4014 \$



Cat D-2930

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a word from your EDITOR

The festive season is upon us. Holidays and the Christmas and New Year Festivities are now on everyone's mind.

Many will be thinking of new equipment. Others will be planning portable and mobile operation. Our advertisers have something to suit. Remember to tell them that you saw it in Amateur Radio. When undertaking mobile and portable operation give a thought for safety. Look up and watch out for power lines when rigging temporary agrials.

Have your extension leads checked. Treat unknown power points with caution. Simple checks may save your life. Some holiday power sources may not be as safe as we have come to expect. A modicum of care and simple checks will keep your holiday happy.

Make this holiday a safe one. Whilst relaxing and recovering from a hectic 1983 why not write up your premier project. Amateur Radio is always looking for good articles. So take the time and write for your magazine.

I would like to thank the Publications Committee, contributing editors and all contributors for their support during the year. Special thanks also to the staff of the Federal Office and to Betken Productions for all the effort they have put into the production of the magazine.

Last but not least I would like to wish every reader the compliments of the season.

AR



WIA NEW charges will be applied for installation of

The Institute is not happy with the policy currently issued and will be negotiating the TECHNICAL REQUIREMENTS details with Telecom

Below is a precis of the relevant sections. CATEGORIES PERMITTED TO INTER-

- 2.1 Radio amateurs operating a fixed or mobile
- AUTHORITY TO CONNECT
- 4.1 For all situations an application for authority to connect will be necessary and would be valid for twelve months.
- 4.2 When applying for authority, all categories are required to submit documentary evidence of inclusion in para 2.1 above.
- 5.1 Service that interconnection provides may not be sold, leased or rented.
- RADIO LICENCE 7.1 The radio service to be interconnected and where appropriate must have a licence.
 - CHARGES Call Charges
 - Natural call rates will be charged. Access Charges Non business telephone service - \$2 per month (per connect point between the radio service and the switched telephone network).
- CONNECTION The connection of radio equipment as defined will only be permitted via a Telecom provided socket installed exclusively for the purpose. Standard

the socket.

Equipment used to provide the interconnect facility must meet the technical requirements of Telecom specifications 1053, 1439, 1302, 1222 and any other specifications that may be produced specifically for this purpose. Details of the equipment will need to be submitted to Telecom for evaluation and a permit for its use issued before it can be considered for use of an authority to connect. Standard charges for evaluation of equipment will

These conditions replace all previous and take effect from 29/9/83.

Naturally, Phone Patch can only be conducted between countries with which Australia has Third Party agreements and Phone Patch facilities.

LORD HOWE ISLAND

Following representations from the amateur community to DOC approval has been given for the callsian VK2LHI to be employed by amateur radio clubs or amateur groups engaging in "DX" competitions, for specified limited periods, from Lord Howe Island

Approval has been given to the Down Under DXers Club to use the callsign VK2LHt during the CQ World Wide DX Contest taking place between 23rd October 1983 and 3rd November 1983. Club station rules apply for the duration of the contest

CONVENTION 1984

By the time members read this issue and have recovered from the Christmas holidays.

the next WIA Convention will only be four months away

Now is the time to bring to the attention of your Division Councils items that you leaf need to be discussed at the convention



Page 12 - AMATEUR RADIO, December 1983

PRESIDENTIAL COMMENT



TRADITIONAL CHRISTMAS!

It's that time of the year again, some say "The Silly Season". Children in particular look forward to it. We parents still have vivid memories of last years' Christmas celebrations

It seems the older we get, the quicker each year seems to pass something traditional?? One could say that is the price we pay for progress.

Talking of progress, let me reflect on some of the current doings within the Federal Body of the WIA. There are several nems on our plate, but two of these require an early "airing" to advise members of our position, while most of you are relaxing and enjoying the holiday festivities, several of your volunteer representatives will be working extremely hard.

Two important items are:

Proposals by Queensland vachispeople trying to get their foot into the top 50 kHz of the 20 metre band for marine use exclusively

Consistent advertising of general coverage transmitting amateur equipment, by an established

NSW amateur retailer, and directed towards mariners. In both of the above, we are being hampered by articles published in vachting magazines, which

condone the use of converted amateur equipment on marine and other commercial frequencies This type of activity is not only unethical, it is also illegal to use amateur equipment on marine

In my opinion, both of the above items are simply - "not on"

We must be very careful that the power of the "mighty dollar" does not edge its' way into the amateur service again.

These continued threats do not enhance relations between the amateur and vachting fraternities. Our complaints are falling on deaf ears, therefore, WE must now be prepared to take action to protect our interests.

(A) Closely monitor marine traffic in the amateur bands, varicularly 20 metres, (14,313 MHz), then.

(B) Take special note of the joint WIAINZART statement published in the August issues of AR and Break-In (NZ), and other magazines.

(C) Give consideration to a complete shut down of maritime mobile "traffic nets", except in cases of emergency. (Are they serving any useful "Amateur" purpose")

(D) Consider a box cott on the retailer(s) who has lined his pockets at our expense, by openly advertising and selling converted amateur transmitting equipment to the vachting fraternity

This action alone has been the cause of much frustration, and one of the main reasons for the imposition of the 30% tariff duty.

Make it known to the retailer the reason for the boycott.

The new radio-communications act will assist here, if and when it is finally passed by the Senate. In the meantime, and prior to new regulations being formulated, much harm is being done to the Amateur Service by these parasites

We therefore must look after our own interests first

DON'T FORGET:

Subscriptions for 1984 are now due, please renew promptly to ensure proper continuity

A SPECIAL CHRISTMAS NOTE:

Alcohol and cars don't mix -- TAKE A TAX1 INSTEAD -- WE need you TOO!

A joyous and safe Christmas from Bruce Bathols, VK3UV on behalf of the WIA Executive

STATION CONTROL PANEL - Not A Weekend **Project** Ivan Huser, VK5QV

7 Rond Street, Mount Gambier, SA 5290



In this the fourth and final article, I would like to present some ideas for a station control panel and extend the discussion to include some notes on the shack layout.

My interest in station control panels goes back to an early fascination for the control console associated with broadcasting stations. The panel currently being used at VK5QV is the fifth in a line of such panels which have been constructed over the years and is by far the most complex. This is due in part to the advances made in solid-state electronics and the practicability of packing a lot of electronics into a comparatively small

The front of the panel is a standard 19 inch (483 mm) rack and pane width, is 4% inches (120 mm) high and slopes back from the vertical by about 20° The panel is positioned centrally under the shelf supporting the HF equipment - see cover photo

The electronics associated with the control panel is completely shielded in a metal enclosure behind the panel proper. The rear apron of the enclosure is used for the entry and exit of cables Mounted on the apron are two double

general-purpose-outlets, a fuse, a key-switch and several sockets. As well as the 240 V, two 12 V regulated supplies and a 9 V regulated supply are brought out. Due to lack of space most of the connections are made using flyleads through grommeted holes. Shielded compartments are used to isolate the power and audio sections from the rest of the circuitry

CONTROLS

Figure 1 shows the placement of controls on the front of the panel

1 Microphone equaliser.' The three knobs on the left, control the equalisation of the panel mounted microphone. The fourth knob is a slide switch used to select the

- appropriate input to the transceiver microphone 1, microphone 2 Japa recorder, two-tone test signal etc Microphone 1 This is a panel mounted
- electret microphone permanently connecled to the graphic equalizer
- Microphone 2 This spoket is for the connection of an alternative station microphone Thetransceiver push-to-talk connections are also brought out to this sockel
- Two-tone oscillator, Frequency, balance and gain controls are brought out
 - Headphone sockets These sockets are connected so that standard stereo phones can be used. One socket is attenuated such that there is a balance between sneaker and headnhone volume
 - Digital inside/outside thermometer Speaker switch. This connects the

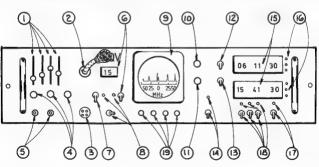


Fig 1 — Panel Layout

external speaker in parallel with the headohone sockets

8 Beam rotator control A 'centre-off' type toggle switch is used to control a proppright motor via solid state relays. Two light emitting diades indicate the direction of rotation of the beam. Beam heading is shown on a great circle map located above the equipment

Station manifor This is a copy of commercial 75 mm cathode ray oscilloscope. On receive, it opprates as a panoramic monitor using a panoramic adaptor * On transmit, it operates as a RF monitor via a capacitive RF attenuator. The time-base has two settings which are automatically selected when going from transmit to recove

10 RF attenuator See figure 2 for details 11 Display centering This control centres the panoramic display

12 Tape recorder switch. This allows the tape recorder to be switched between two sources 13 Key select Either the manual key or the

CW keyboard may be selected by this switch 14 Push-to-talk Moving this switch upwards places the transceiver in the transmit mode. The relay in the transceiver is used to switch on the linear amplifier a flashing LED above the PTT switch and at the

same time select the appropriate timebase rate for the monitor 15 Clocks. Two six-digit clocks showing UTC and local time respectively operate from a single crystal. A battery back-up system maintains correct time during

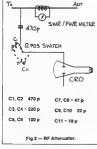
power failures Time setting buttons.

17 Main power switch.

18 Auxiliary power switches

tenes

19 Taps indexing. Although not yet operational these push-buttons will enable a particular message stored on an endless cassette to be indexed ready for playing. This should be useful for RTTY 'brao'



CONSTRUCTION

Although this is by no means meant to be a constructional article, some reference to the problems encountered may be of interest to

anyone contemplating such a project. One major problem associated with such a project of course is the metal-work. Even if one has access to metal-working facilities. the marking out, drilling, filing etc is quite a tedious process.

After the metal-work is completed use a good automotive undercoat before spraying the final colour I used automotive touch-up lacquer available in spray cans. This produces an excellent finish although rather expensive. My panel is finished in 'Chrysler Mercury Silver' with black rub-on lettering Plain chrome cabinet handles were fitted to add a professional touch and to allow the unit to be withdrawn from its normal position.

The two main problems encountered with the control system were earth-loops and RF feedback

Generally speaking, the problem of earthloops was the easiest to solve. It was simply a matter of earthing the leads between the control panel and the transceiver at one point only - at the transceiver. This means that such things as the headphone sockets and microphones must be insulated from the panel. It may also be necessary to by-pass these floating leads for RF at the point of entry (or exit) to the control panel

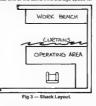
To reduce the possibility of RF feedback the power flex into the unit should be filtered by passing all three conductors through a ferrite toroid three or four times and then bypassing the individual leads with suitable capacitors. The panel itself should be connected to the station ground via as short a lead as possible

If RF feedback persists, then the normal procedures for detecting the point of entry of the RF should be adopted and a satisfactory solution effected

SHACK LAYOUT

The acquisition of a station control panel allows most of the cables associated with the installation to be routed behind the equipment thus providing an open, tidy, functional operating area

Also with the equipment raised above the table top, dials and meters are more easily read, and at the same time storage space for



the typewriter, paper or whatever is made Irrespective of how a station is organised some leads must inevitably be connected to

the rear of the equipment making access to them somewhat difficult. This problem may be solved by making the operating table an island

Figure 3 shows the basic layout of the operating area at VK5QV Having the workbench close to the equipment makes maintenance much easier since all interconnections are close at hand. A curtain attached to nylon runners separates the shack' from the workshop'

FINALE

This series of articles was written in an attempt to show how the writer went about setting up a shack and perhaps to stimulate some ideas among readers. In no way am I saying that this is the only way' For instance. the layout of a shack and the equipment in a shack is an individual thing and to some extent may well be dictated by the amount of real estate assigned by the XYL as 'for amateur rad o purposes on y'

NOTES

1 MICROPHONE EQUALISES - A Weekend Project - Amateur Radio November, 1983 2 TWO-TONE OSCILLATOR - ETI July 1980

3 DIGITAL INSIDE OUTSIDE THERMOMETER -A Weekend Project - Amaleut Radio October,

4 PANORAMIC ADAPTOR - A Weekend Project -Amateur Radio October, 1983.



"I don't do anything much! He calls CQ and answers all the questions."

from 73 Magazine Jan 83



"Verticals?? I had a vertical that was so bad it wouldn't even receive QRM 1 by VK2EBM



EQUIPMENT REVIEW

THE KENWOOD R-2000 GENERAL COVERAGE RECEIVER

Having been a happy owner of an R-1000 now for some years I was most interested to see just what the new R-2000 had to offer. I was not disappointed, it has a lot to offer.

No doubt many present owners of the R-1000 will be considering an update to the 2000 so I am sure that a few comparative comments might be of interest. However lets go back one step before this and look at the evolution of the current model. I am sure many readers will recall the TRIO receivers of the early 1960s. They were single conversion four band valve sets with some-what mediocre performance. I well recall the reams of modifications that were published in AR and other magazines around that time to cure frequency drift and provide better sensitivity, mostly to little avail. In spite of this, many hundreds of these receivers must have been sold and a few still seem to pop up on the secondhand market from time to time. These were followed by a couple of similar design but with transistors instead of valves in those days this was a mixed blessing. Sensitivity and drift characteristics were better but often cross modulation was almost intolershie

The R-1000 arrived on the scene in 1979 and at last we had a receiver with all required facilities and a completely professional performance. Many thousands of these receivers must be in current use in both amateur and SWL shacks as well as many professional locations. A couple of vears ago. Kenwood released the R-600

which was basically an economy version of the R-1000

The R-2000 is somewhat larger but the same weight as the 1000. The main difference is in increased width, up by 75 mm. The increased width allows for a good size front facing speaker. The somewhat controversial carry handle come tilt bale of the 1000 has been replaced with a conventional

tilt bale and a side mounted carry handle Basic specifications remain the same with full coverage from 150 kHz to 30 MHz with reception facilities for SSB, CW and AM plus the added FM mode But from here on things change somewhat. Band changing is now fully electronic. Band up/down buttons allow for moving in 1 MHz steps either singly or by holding the button down in rapid sequential steps. Ten memories with memory scan or programmed band scan are available with digital readout to indicate memory selection. The digital frequency readout now reads to 100 Hz and also doubles as a clock which can be set for two time zones with a 24 hour readout. Three speed tuning in 50, 500 Hz and 5 kHz steps make for easy tuning across the

Without doubt the Kenwood design engineers have closely followed the electronic design of the TS-430S transceiver Even the appearance has quite a family resemblance

THE R-2000 TECHNICAL FEATURES As is unfortunately typical these days, no circuit description or details are covered by the instruction manual However a block diagram is included and a few details from this will be of interest. Six hand pass filters are fed from the antenna input via a 10 dB per step front end attenuator. The band pass filters cover two to one frequency ranges with the exception of the low band which covers from 150 kHz to 1 MHz. The RF stage is single dual gate FET followed by a buffer stage into a balanced mixer the first IF of 45 9 MHz Second conversion is to 99 MHz and the third to 455 kHz Balanced mixers are used throughout Provision is made for four filters of which three are supplied, a 2.7 kHz for SSB, a 6 kHz for AM and a 15 kHz for FM. The option is a 500 Hz CW filter. Three detectors are switched for SSB/CW, AM or FM. The frequency selection, memory and scanning modes are controlled by the CPU which is powered by a lithium battery when the primary supply either AC or optional DC is removed. This battery has an estimated life of five years



The Filter Section.

THE R-2000 IN USE.

On initial switch on the 2000 really looks superb. The digital readout is bright and clear enough to read right across the room The selected memory channel is identified with a bright yellow readout to the left of the frequency readout. A nice feature noted when the receiver was set on my desk where the rubber buffers on the tilt bale, no possibility of scratching my desk this time. Firstly the two clocks were set,

one on UTC, the other on local. The clock



also has a timer function that allows the receiver to be automatically switched on at any pre set time along with a tape recorder if required, it was noted that the SSB BFO frequencies were well out of adjustment as received with LSB signals sounding very high pitched USB was acceptable but perhaps a little the other way - a bit bassy. Naturally the instruction book contains no information on correcting this, so it was left

The ten memories were programmed for our favourite operating frequencies and a few short wave broadcast channels. As received from the distributor, our R-2000 did not operate below 2 MHz. The instruction manual refers to this as an 'X' model A note included from Kenwood says that the receiver is capable of receiving 150 kHz to 30 MHz by cutting D59 on the printed circuit board behind the function switch. I was unable to locate D59 during a quick search of the main printed circuit board. During the setting up process, I was rather disappointed to see that Kenwood have done away with the recessed, upward facing rear panel which was quite an innovation on the R-1000.



Close-up of Switches.

The tuning system is now fully electronic with three push button selected rates These are 50 Hz, 500 Hz and 5 kHz steps which give an actual tuning rate of 10, 100 KHz and 1 MHz per knob revolution. These speeds also apply when band scanning is In progress. I feel that Kenwood have not chosen these speeds as well as they might. They are all too fast, I feel that 10, 100 Hz and 1 kHz would have been a better choice The 1 MHz per tuning knob revolution is after all taken care of with the up/down button. However I must admit that tuning SSB alonals is a very simple process, but the next step up, I found a little too fast for AM stations, I wonder if there is a simple modification to change this

Perhaps the best thing on the R-2000 is the memory system it is, in fact, almost identical to the TS-430 transceiver. The ten memories are programmed with both frequency and mode. So you can have an USB channel on 20, a LSB memory on say 40 and 80 plus a few AM broadcast stations. It is then possible to select any one by a push of the appropriate memory button or to scan around them sequentially. The system will pause long enough at each memory so that the operator can decide if a stop is required. If so, a push of the hold button will stop the scanning sequence

The programmed band scan using memories nine and ten can be used to tune automatically between any frequencies entered in them. The scan speed is selected by the tuning rate buttons

AM reception with the R-2000 is excellent. Kenwood have dropped the wide selectivity position of the R-1000 and now provide selection between 6 kHz at the -6 dB points or the SSB filter of 2.7 kHz. The narrow/wide button that allows this selection also selects the narrow CW filter or SSB selectivity when the CW mode is in use. Unfortunately during the course of our tests, I was unable to hear any FM transmissions on 10 metres, but a socket at the rear of the 2000 is labelled VHF converter, so maybe Kenwood have something in mind here. Time will no doubt

tell The squeich control is useable on all modes and works quite well if you happen to like squelch on HF With fading signals I can never pick the right level to set the

My comments on the TS-430S 'S' meter equally apply to the R-2000 it looks great until you try to use it, then you cannot see it. The noise blanker is both good and not so good Not so good on the Woodpecker, in fact no effect at all, but quite good on ignition and general electrical hash. The 'Record' output has a constant level output, unaffected by the AF gain. A great idea, but why only on receivers. How about one on transceive.

THE R-2000 ON TEST

The following test equipment was used to produce these figures. Daven audio power output meter. AWA F242A noise and distortion meter. A 100 kHz crystal calibrator with multi vibrator output. Sensitivity tests are subjective and are checked by comparative tests with other equipment.

Audio output was taken from the external speaker socket into the power meter terminated in 8 ohms. The crystal calibrator was fed into the anlenna input and the tuning set to produce a 1000 Hz tone. Audio output checks were based on this. Maximum power output was 3 watts but with very high distortion. At 2 watts distortion was 3.2% and at 1.5 watts 1.9%. With the audio gain control set at zero. system noise was -65 dBm, a very acceptable figure

The tone control was checked in the fully on position. At 2.5 kHz the response was down 12 dB. At 2 kHz -9 dB. 1.5 kHz -7 dB. 1.0 kHz -4.5 dB and at 700 Hz -3 dB. This is quite acceptable performance and was useful lopping off some of the excess highs in the LSB position. AGC action was checked by listening to a variety of strong and weak signals. There was no pumping or popping on strong signals and in general SSB reception sounded very smooth. AGC decay is selectable for slow or fast with a front panel switch, but is not automatically selected with a change of mode. Next the crystal calibrator was fed into the antenna input to give an 'S' meter reading of S1. The audio output level was checked and then the RF input was increased to give a reading of S9+30 dB The audio output increased by 2 dB. This was a quite reasonable figure.

The response of the SSB filter was checked by feeding a weak signal (below the AGC threshold) into the front end and measuring the audio output level while tuning across the signal. The USB setting was used as this appeared to be reasonably normal compared to the very off frequency LSB. The -6 dB points were 400 Hz and 2.8 kHz with 3 kHz -12 dB Overall SSB selectivity appeared to be fairly good but perhaps a little wide at the -60 dB points The R-2000 has no IF shift or band pass tuning to help separate wanted signals

from interference The optional CW filter was not fitted to our review receiver From 2 MHz up the performance of the R-2000 was very acceptable. The stability was excellent with little shift over a half hour period from a cold switch on. Pity I was unable to check the low frequency performance. This is where many current receivers fall down badly. While looking around for the clusive D59, I noted that it is possible to have either open scan or scanning that will stop on signal To arrange this, a jumper is changed on the circuit boad accessible with the bottom cover removed Further details are on page 11 of the instruction manual.

INSTRUCTION MANUAL

The R-2000 instruction manual is completely disappointing. It is a four language thing with English as the first part Sofar as operating procedure and installation goes, it is quite good. Various types of antennas are discussed in relation to their use with the R-2000. However apart from a block diagram and circuit diagram, there is no technical information stall. A short section on short wave propagation is interesting.

The last-page discusses the options available for the receiver. These are two different headphones, a CW filter and the very excellent Kenwood World Clock, Installation instructions are provided for the CW filter.



Rear View.

CONCLUSIONS

The R-2000 receiver is, without doubt, a very advanced plece of equipment. Not only that, but the overall performance is very good in most wanted respects. Some might consider the appearance to be a bit over styled and the S meter is certainly not up to the overall standard of design. The R-2000 will however out Kenwood right out front in the popular general coverage

receiver market for some time to come Our review model was supplied by KENWOOD AUSTRALIA and all enquiries regarding the R-2000 should be directed to them or one of their local agents.

A Review of the C8900E coming next month.

AMATEUR RADIO, December 1983 - Page 17

EVALUATION AND ON AIR TEST OF THE R-2000 RECEIVER

Serial No 3070643

Category	Rating	Comments
Packaging	***	Double carton with foam inserts.
Size	**	Larger than preceding model.
Weight	***	Same as preceding model.
External finish	***	Well finished but slightly over styled.
Construction quality	***	Good quality boards and internal wiring.
FRONT PANEL		
Location of controls	***	No concentric controls. All well faid out.
Size of knobs	***	All very good.
Labelling	***	Clear labelling.
Meter		Very over styled. Hard to read.
VFO knob action		Very smooth, but tuning rates not ideal.
Dial readout		very smooth, our turing recorder teems
Analogue	NA	
Digital	1471	Bright and easy to read. Accurate resolution to 100 Hz.
Status indicators	****	One of the best vet.
REAR PANEL	88	Not nearly as good as the R-1000.
RECEIVER OPERATION		Not nearly as good as the K-1000.
VFO stability	****	Hard to fault, see test section,

Digital dial accuracy	****	Spot on. Recalls both frequency and mode. Best yet seen.
Memories		
Shift/width	NA	No shift or width controls provided.
Notch filter	NA	No notch filter.
Spurious responses	***	
5 meter		Realistic response Smooth action.
AGC performance	***	Very adequate AGC performance
Signal handling	***	No problems with strong signals
RF attenuator	***	10 dB steps. Better chosen than R-1000.
RF gain	NA	No RF gain control.
Sensitivity	800	On subjective test, very good.
Selectivity	***	Good choice offered — adequate selectivity for most purposes.
NOISE BLANKER		
Woodpecker		No effect on Woodpecker.
Electrical & ignition noise	***	Worked well on this type of noise.
QUALITY OF RECEIVED SIGNAL		7,
Internal speaker		Front facing speaker. Satisfactory quality
External speaker	NA	No optional speaker offered.
Headphone output	***	Stereo compatable. Output level good.
Tone control	***	Very useful top cut.
		Satisfactory as operator manual. No technical information

Rating Code: Poor * Satisfactory ** Very Good *** Excellent ****

WHO IS THIS AMATEUR?



He first obtained his licence on 18th soperation of 18th soperation 18th source of 18th soperation 18th source of 18th source

A WIA Queenstand member since pre-war days, he served on executive on more than one occasion, being QSL Officer twice (a duty he discharged with considerable efficiency) and Morse code instructor when the meetings were held in the Celtic Chambers.

During WWII he served as a W/O in the Navy for the full five years of its duration, then commenced working with the PMG as a technician and moved to Dalby He later returned to Camp Hills, Brabane and Spart a considerable time at the Frequency Measuring Station at Capitable until his retirement in 1978. As a "DXer par excellence" and a member of FOC and RSG Bhe became known as "Brabane's Mr DX", having over 300 counties confirmed to his credit.

The beautiful bushlend setting of Lopanies, south-east Queenland is now his chosen place of abode where he has an extense south-east Queen on the size almost very day. One can best described mass an able whey do not be size almost very day. One can best described mass an able whey do not be size almost an able to performance in a low key the work he performed in the PMG — we almost your described in the PMG — we almost your described on the performed in the PMG — we almost your season of the VARF (flormed productions).

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MULTI PURPOSE CRIMPING TOOL

G 30040



The Greenpar crimping tool G 30040 is a versatile, low-cost tool which enables the small user of BNC, TNC, and UHF connectors to take advantage of the reliability and ease of assembly offered by crimped connections.

- 3 die design permits crimping of both 50 and 75 ohm connectors.
- Full closure mechanism ensures complete crimping operation.
- Rigid high leverage design provides consistent high quality crimped connections.
- Crimps RG-58 C/U, 141 A/U. 142 B/U, RG-174 A/U, 188 A/U, 59 B/U, 62 A/U and RG-55 B/U cable.
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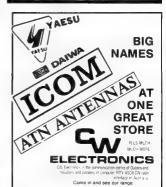
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A MICROPROCESSOR CONTROLLED ANTENNA SYSTEM

Ralph Birrell VK3BIP 11 Turner Road, Strathfieldsaye Vic 3551

As satellite communication is becoming more commonplace it is desirable that antennas be automatically controlled to follow a satellite in its path across the sky. This will free the amateur from the problems of tracking and enable him to concentrate on communicating with his fellow amateur. This article describes a preliminary design for using a microprocessor for automatic control of an antenna.

THE WROOLEN

The 3 dB beamwidth of an antenna is usually several degrees. A five element yagi has a 3 dB beamwidth of about 125 while a twelve element Yagi at 1296 MHz has a 3 dB beamwidth of about 180.

With parabolic antennas the beamwidth depends on the diameter and surface irregularities Typical values are a) Frequency 1297 MHz

Diameter 3 m 3 dB beamwidth 5°

Power gain 30 dB b) Frequency 5761 MHz

Diameter 3 m 3 dB beamwidth 2°

Power gain 38 dB c) Frequency 10,369 MHz Diameter 1 m

3 dB beamwidth 2° Power gain 38 dB

These figures indicate that an antenna control system which can point the antenna axis to within '2" of the actual satellite position at any time will suffer very little degradation of signal strength at the receiver input

The tracking problem is three dimensional but can be simplified into a linear equation for the horizontal plane from 0 to 360 degrees and a parabolic equation in the vertical plane from 0 to 90 degrees. These two combined motions will give compiete coverage of any point in the sky

The vertical elevation above the horizon can be expected to be an inverted parabola of the type

m = AT - BT2

equation can be followed

where O - degrees above the horizon

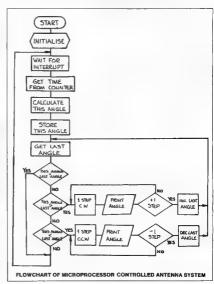
A. B are constant values
T time after the satellite rises

above the horizon

The ability of the computer to do arithmetic will determine how complex an

For a preliminary design a period above the horizon of 100 minutes was chosen. This is of the same order as that expected for the phase III satel ite in the southern hemisphere.

A feedback loop is used to check that the antenna has moved if not a repeat instruc-



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tion is issued until the antenna moves as required. Atternatively an alarm could be given if the antenna fails to move

A small parabol c dish antenna from a disposa s radar system was available. This antenna has gearing for movement in both the horizontal and vertical planes and is suitable to prove the overall design.

CHOICE OF COMPONENTS STEPPING MOTORS

STEPPING MOTORS

Sufficient accuracy can be obtained using a stepping motor for each drive. The Ph I ps motor type 9904 112 27001 has a step of 7.5 degrees using a gear ratio of 75/1 the step becomes 0.1 degrees at the antenna.

The pu out torque at the antenna would then be about 6-7 newton metres

With a Yagi or large parabolic antenna the torque required to move the antenna on its bearings is relatively smail. The worst condition will be were the antenna is being seted on by wind guids when the drive is required to move the antenna soling seted on by wind guids when the beautiful to the singuistic properties of the set o

STEPPING MOTOR CONTROLLER
A Phi ips controller chip SAA 1027 can
be used to send out a pulse for each step of
the motor. Another pulse can give forward
or reverse direction as required.

MICROPROCESSOR
A National Semiconductor chip, the INS

8073 microprocessor chip is used. This device is an 8 bit microprocessor with a wide range of arithmetic (8 and 16 bit) with at ny basic interpreter built in to the CPU in an internal 2.5 kiloword PROM

The availability of Tray Basic makes programming much more efficient and organized than using machine language. Tiny Basic is a suitable anguage for

control applications.

The chip is available on a board with various input/output ports from JED Microprocessors at a very reasonable cost. The chip is capable of integer arithmetic (to the nearest whole number) which is suitable for the stepping motor use.

A programmable timer is not uded on the board and this can be programmed to nterrupt the processor at second minute or hour intervals.

FEEDBACK CIRCUITS

A small rotary pulse generator could be used to check the movement of the antenna eg a Philips V 23465 digital shalt encoder with 5000 pulses per revolution

A Sony Digit-let was avai able and this was adapted to measure circular motion by wrapping the magnetic str p on a wheel of suitable diameter, the wheler fortating with the antenna. The digitualize mists a pulse every 0.5 min direction plant the reading head. The pulses can be counted with a 792-citih and the computer counted with a 792-citih and the computer after each step. The digituler can sense floward or reverse ordation.

PROGRAMMING

The programmable timer was set to provide an interrupt to the processor at provide an interrupt to the processor at 100 minutes above their provided time at time of 100 minutes above their provided time of 100 minutes and 100 minutes are provided to 100 minutes are provided to 100 minutes, are required minimum elevation, for the period of 100 minutes, are required for any satellite.

The flowchart for the programme for the vertical movement is as shown in the illustration

For the first trial the time and angle of elevation were printed on the console and the angle output to a LED display

The programme was written in TINY BASIC with machine language subroutines to increment the time and to increment or decrement the angle as required. These subroutines are called up using a LINK instruction.

At each minute interval the processor calculates the value of Θ and steps the antenna until this value is reached by forward or reverse stepping as required. After debugging, the programme was

After debugging, the programme was transferred to EPROM which was then plugged into the board with the programme starting at location 2000. The programme was started from the console.

After successfully proving the programme for elevation a new programme is being written which will enable movement for elevation and azimuth for follow any particular equation desired or to move the anienna to point to any position in the sky when the coordinates are fed in from a keyboard

CONCLUSION

The INS 8073 microprocessor provides a low cost solution for the control of an antenna system to follow a given equation across the sky or to move immediately to point to a given point in the sky. The availability of the TINY BASIC language on this chip makes programming relatively simple and cost effective

I will be happy to provide a copy of this issuing to experimenters or afternatively programme an EPROM for anyone who wishes to seriously experiment in this field

Editors Note: An SASE should be enclosed with any request for information from the Author.



URGENT!

Please let us know of clubs and schools etc. starting theory classes.

Where, when, how much and whom to contact.

Contact Brenda ¥K3KT.



TRY THIS

THE MICROWAVE OVEN TEST

John Hassell, VK6ZGF/NXX 77 Kalında Drive, City Beach, WA 8015

Many vital pieces of amateur radio gear such as loading coils, antenna traps and RF chokes can be home made using odd bits of PVC piping or various plastic containers as coil formers. One drawback with this practice is that there is no way of knowing the dielectric properties of the PVC pipe or detergent bottle you may have on hand. This is especially a problem if the project is an antenna loading coil through which you intend to run the legal power limit of RF 11 the plastic material has poor die.cetric properties in strong RF fields, then at best you will end up with a lossy toading co.l of indifferent Q, or worse, the whole thing wilmelt into a goody mess under sustained high

Here is an easy way to test the discerimproperties of various plast, eitem you may wish to press into service. I ne only major piece of test ager required is a m errowave oven. The method is simple. Place a sample of the material in question on a paper plate. Pop this in the microwave oven for irriumties or you at high power. If the sample is a good dielectrie it will remain cool or regional great slightly warm. If the dielectric properties are poor, then the sample wil get very not or even met. Hence the paper plate

By comparing how warm various types of plastic get, at is possable to select the best for the job

the job

One word of warning. Be very sure no metal is in the sample you are testing. If you wish to test coax cable, remove the center conductor and ALI the braid. Even a small whisker of write will get hot enough to set fire

to the plastic being tested

JOIN A NEW MEMBER



EQUIPMENT REVIEW

Peter Gamble, VK3YRP TECHNICAL EDITOR



The most common piece of test equipment in an amateur's shack used to be a moving coll multimeter with a sensitivity of somewhere between 1000 and 20 000 ohms per volt. When a high impedance measurement was required, a VTVM was usually lifted down from the shelf, plugged in and allowed plenty of time to warm up and stabilise. With valve equipment the norm, these meters provided sufficient accuracy, usually within 2-5%, to build and service amateur radio equipment. But this is changing papidly. Transistor and integrated clicult equipment often demands more sensitive and accurate measurements, and digital multimeters provide this with high impedance measurement and no warm up'. They are also becoming more affordable. One such digital multimeters

APPEARANCE

The 7040 is shand size natrument buillinot an qui most ASS plastic case and weights east than 400 grams. It also contains a melal shell do minima as RFI problems. The functions are selected by two dark coloured push buttons, and one of six syst coloured push buttons is used to select the appropriate arrange. Change over from voltarionals to contain a containing course in the containing course when the containing course with a containing course when the course of the moved to second social course of the course of th

The I3 mm 3.4 g tiliquic crysta displays easy to ready from a wide range of viewing angles A1 thail enables the multimeter to be rat aed to approximately 30 degrees A standard 216 9 volt battery powers the instrument and a socket a provided on the side of the case for an external regulated power subply A single sheet leafter that the ranges resolution accuracy and operating instructions Italian children circuit disagrams.

and parts list
Overrange indication is provided by a
leading digit of "I" and the remaining three
digits bianked A LO BATT" indicator came
on when the battery voltage dropped below

SPECIFICATIONS

7.1 volts

The basic accuracy of the multimeter is quoted as 40 1% of reading +1 digit. This accompanying table has been extracted from the detailed specifications and gives an overall picture of the ranges and accuracy of the instrument.

PARAMETERS 7040 SPECIFICATIONS SUMMARY All accuracy figures quoted assume a one year calibration cycle and an operating temperature of 18°C to 28°C.

to 28°C 9C VOLTAGE: Ranges 200 mV 2 V 20 V 200 V 1600 V ,max 9C input)

Accuracy ±0.1% of reading +1 digit nput resistance 20 Mohm on 20 V to 1000 V ranges. (Measured 0.4 Mohm on 200 mV range 1 Mohm on 2 V range) Ranges: 200 µA, 2 mA, 20 mA, 200 mA, 2 A, 10 A (max RC input) Accuracy: up to 200 mA, +0.5% of reading + 1 digit

AC VOLTAGE

Ranges 200 mV 2 V . 20 V . 200 V 750 V (max AC input) Accuracy: - 0.5% of reading - 5 digits Frequency Range Up to 20 V — 45 Hz to 500 Hz 200 V and 750 V — 45 Hz to 120 Hz

legul impedance: 10 Mohm shunted by less than 100 pF for 20 V to 750 V ranges.

Response Avarage responding, calibrated in RMS of a sine wave

AC CURRENT

Ranges 200 µA 2 mA 20 mA 200 mA 2 A 10 A (max AC input)
Accuracy up to 200 mA + 1% of reading + 5 digits

2 A 10 A ranges: - 2% of reading + 5 digits Overlead protection: as for DC

RESISTANCE

Ranges, 200 ohm, 2 kohm, 20 kohm, 200 kohm, 2 Mohm, 20 Mohm Accuracy 2 kohm-200 kohm, -0.3% of reading +1 droit

2 Mohm: = 1.0% or reading +1 digit 20 Mohm: = 1.0% or reading +1 digit 20 Mohm: = 1.0% or reading +1 digit Mohm: = 1.0% or reading +1 digit 280 mV

HOW IT PERFORMED

A series of tests were carried out, including comparisons with a more abborate digital multimeter. A number of DC voltage and current tests were performed over the range current tests were performed over the range problems were encountered, and accuracy on a comparative basis was well writin specifications. The kinearity was checked across ranges and was within 11 digit. The voltage drop across the meter when it was measuring current was checked and found to measuring current was checked and found to provide the control of th

An audio oscillator was first used for AC voltage tests, and a convenient frequency of I kHz selected. The two DMMs were connected and a significant difference noted in the readings over a wide range of voltages Connections were double checked and when no explanation could be found, the specification leaf et was come, ted it was here that the explanation was found — socuracy was maintained only up to 500 Hz. Other ogistal multimeter specifications were consulted and all fold scrinist story. The frequency resconses was then immediately and the following results noted for a mome is 300 to sis

requency	Reading	Bitterance
500 Hz	1 495 V	0.3%
1.0 kHz	1.470 V	2.0%
2.5 kHz	1.398 V	8.8%
5.0 KHz	1.235 V	17 ¹ / ₁₀

The 3 dB point was around 7 kHz. Thus the DMM can be used for approximate comparative measurements over the majority of the audio range with absolute measurements being confined to below 500 Hz. A number of tests of 50 Hz AC vo tages over the range 0.2 to 20 volts were made, and again, accuracy on a comparative basis was well within specifications. Tests were also made on typical audio signal voltages. However, the readings were confused as the sampling rate, about 3 per second could not cope with a rapidly varying voltage (The more e aborate DMM also suffered from the same problem. No AC current tests were performed A variety of resistors were measured.

configuration of the configura

CALIBRATION PROCEDURE

Recalibration requires a 190 millivolt DC and pure sine wave AC source. The readjustment procedure, having obtained an accurate source is simple - adjustment of two potent ometers one for DC and one for

ACCESSORIES

The multimeter was supplied in foam packaging, along with a 9 voit battery, a pair of test leads, and an instruction and specification leaflet.

CONCLUSION

A digital multimeter is a useful addition to the first equipment in an amaleur shack once proceed to the first equipment in an amaleur shack once proceed of sophisticated test equipment, compared to a convenional multimeter, it takes a stitle time to learn its full potential. The Parameters 7040 is a versatile instrument that can make file a followed by the control of the proceed of the control of the proceeding of the proceedin

resolution and sensitivity are more than satisfactory for amateur purposes, and at a quoted 100 hours from a carbon zinc cell, or 200 hours from an alkaline cell it is economical to operate Any disadvantages? Well, a good RF probe, say good to 500 MHz would be pure.

The test instrument was supplied by Parameters Pty Ltd. of 53 Grosvenor Street Mordialloc, Victoria. The Sydney Office is at 41 Herbert Street, Artarmon, NSW

ANOTHER COUNTRY

1/138 Bluff Road, Black Rock, Vic 3193

Alan MacLean VK3ASL

Whilst on a relaxing holiday the opportunity arose to make the holiday a mini DXpedition. With a little resourceful thinking antennas were quickly erected and a very enjoyable time was spent on the bands to make a simple holiday into a memorable time.

My XYL and I were travelling north on a holiday, when we found ourselves at Port Macquate from where there is a regular air service to Lord Howe Island

My FT101 was in the car with some home brew helical whips, but if I took the rig to the stand the whips wouldn't be much use (without the car) so I began to think of what else I could use for an antenna.

car) so I began to think of what else I could use for an antenna.

Before leaving Port Macquarie I purchased a reel of light nylon fishing line and arranged for the owner of a TV shop (who also happened to be an amateur) to supply me with 10 metres of hook-up

wire soldered to the centre conductor of a Beiling Lee plug. Our accommodation at the island was a self-contained flat which had some nicely placed paint rees about 10 metres tall. I held a piece of cord. to the fishing line and threw it over a palm, then attached the hook-up wire to the fishing line and halled it up the true.

A piece of gavanised wire poked into the ground made an earth connection and I attached this to the earthy side of the Belling Lee p.ig with some of the hook-up wire. The centre of the plug was, of course, a ready soldered to the hook-up wire, so now I had a rough 40 metre yet call after the action.

Next, their gives installed in the flat and connected to the 230 volt power. I had brought my light weight home brew SWR bindge which had Belling Lee sockets so I fed some RF through the bindge to the artenna. The antenna was hauled up and down a few times and bits snipped.

off the top until the SWR was reasonable. Then I called CQ 1 was just on 6 PM EST and strength 5 reports were received from Brisbane, Tweed Heads and Adelated Syanals improved by 8 PM

when strength 3 reports were given by several VK3s. Next day we met Dick (VK2AGT) and Noell Hoffman Dick explained that Lord Howe Is and was a separate country from the rest of VK for DXCC purposes and that if I came up on 20 metres, I could work a viot of DX. I scrounged some more hook-up were and another Belling Lee plug from the island's other resident amateur, Ken VK2BKE, with the aim of making up a 20 metre antenna sa measure I cut off two pieces of Using the 40 metre antenna as a measure.

Using the 40 metre antenna as a measure. I out off two prices of wire, guessed as being two quarter waves on 20 metres, p us a bit for luck. Using Dick's soldering iron, the Be ing Lee plug was fixed as a centre insulator between the two wires to make a cipole on 20 metres.

The centre of the dipole and the co-ax were pugged into the SWR bridge and it was hauled up the palm tree with the fahing in eard the ends of the wires were tied back to some bushes with some of the fishing line to make an inverted ver The ends of the vee were termed to get the SWR good enough to

go on the sir. The SWR ordge was 5.1 back at the bottom of the O-ax and thirty countnes were worked during the next four days. On the fifth day I turned on the rig. 5.1 it was very quiet — not even any noise. On looking out the window the reason was soon apparent. The antenna and o-ox had disappered — spir ted away in

the night!

I guess I must have been causing some BCI to someone It certainly wasn't TVI, because one of the delights of Lord Howe was that there was no TV to interfere with

That was a bit distressing Now all I had was about 2 metres of co-ax and about the same length of hook-up wire. An amateur is supposed to be resourceful and I was determ ned that no antenna anticher was going to keep me off the air. So back to my friendly supplied follow-up wire.

The plan now was to make up a 20 metre vertical that could be suspended from a palm tree and retracted into the flat at night for safe keeping. Using what appeared to be 9 inch vinylities on the kitchen floor as

a measure, I cut off 5 metres of wire to make a vertical plus the usual bit for luck. The wire was soldered to a Belling Lee plug and tr mmed as before. The vertical wasn't as good as the inverted vee, but it managed to pull in thirteen countries including five new ones.

Back home later, when I measured the antenna. I found it was 4.57 metres from top to plug and had 1.05 metres of earth lead. It was fed with 50 ohm co-ax. The dimensions bear no relation to anything live heard of before — but it worked.

For many of my contacts, it was their first with Lord Howe, and a number of them said 'Thanks for a new country OM'. I got severa new countries myself—including Lord Howel stand (thanks to Dick. VKZAGT) and joined the select band of people who have worked Lord Howe FBOM Lord Howe.

Lord Howe FROM Lord Howe. There are frequent arraymous to Lord Howe Is and from Sydney and Port Macquarre. The stland is administered by New South Wa es and is located in the Pacific Occas about 700 km north east of Sydney Apart from being a first class DX location, it's a wonderful place to have a holiday and — another country.

'SQUARE-TWO' CONVERTER

Drew Diamond, VK3XU 43 Brivana Crescent, Crowdon, Vic 3136

The 'Square-One' receiver described in AR January-March '83 covers 1.8 to 2.0 MHz. Converters will be required to tune other frequency bands. This converter design may be used with any receiver which tunes 1.8 to 2.0 MHz or more.

An examp e of this application may be for use with a general coverage receiver which tunes permans 0.55 to 30 MHz in flour or five three permans 0.55 to 30 MHz in flour or five provide adequate performance at low frequencies but have very poor bandspread, as a stability and mage rejection at higher frequent flow at Linaxe IF) with a convertise to the control of th

The construction of the Square-One receiver all over depth of convertar(s) in the under charsts area. With this part added, the receiver becomes a full-blown simulative and receiver. If all bands are not required, then only those bands actually reeded may be provided for, and the other bands added later.

DEBEGRMANCE

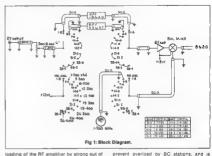
The Square-Two converter when used with the Square-One receiver yielded the performance shown in Table 1

Signal handling ability signification of tests to date have yielded no incidents of cross modulation. Square-law effect, or bothersome internally generated intermedulation distortion products.

The second IF (9 MHz) was measured in excess of -100 dB for every band. Only one internally generated spurnous signal was noted, a very weak sub-microvolt spur on 28 143 MHz.

BLOCK DIAGRAM DESCRIPTION A band-pass filter (BPF) is required for

A band-pass filter (BPF) is required for each band. They prevent the introduction into the mixer of frequencies which are images of the desired frequency, and reduce over-



loading of the RF amplifier by strong out of band signals. The broadband RF amplifier provides gain to incoming signals before they are applied to the singly balanced mixer

The oscillator input port of the mover is supplied with a crystal derived and fillered signal which heterodynes the incomings just on 5-20 MHz. The example, to receive 7.6-10 to 15-20 MHz. Therefore, an incoming signal or 7.0 MHz with be heterodyned to 18 MHz. and a 7.2 MHz to 2.0 MHz. The crystal is always 1 8 MHz test shan in the lower odge of the band to be received for input firequishrood band, the signal insust negotiate a BPF to band, the signal insust negotiate a BPF to

prevent overtoed by BU stations, and is passed by the mixer (remember, it is singly balanced, and the signal frequency is not suppressed). A look at the overall block diagram will show how the entire receiver operates

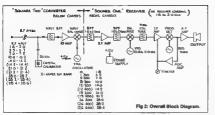
CIRCUIT DESCRIPTION

The Input BPF is necessary to pass only the band of interest. Three to po-cupied Lined circuits are used to cover each band, and are switched into Openhor with two welfars divided to the second of t

The mixer is singly balanced and has about 0 dB gain. U1 a CA3028 d Mennial pair is driven in push-pull wait 72 100 ohm resistors. R17 and R18 term rate the balanced secon dary of I2 so that the input impedance of the mixer looks like 50 ohms. On all bands except 18 MHz, a crystal derived signal is injected into the current source transistor of 11 in common mode, so little or no social acts regard.

TABLE 1:

Frequency Band	Sensitivity for 10 dB S + N: N	1st IF Rejection (1.8 MHz)	Image Rejection
18-20	-122 dBm (0.2 uV)	NA	Greater than 100 dB
3.5-3.7	-118 dBm (0.3 uV)	70 dB	NA
7.0-7.2	118 dBm	78 dB	66 dB
10 0-10.2	-119 dBm (0.25 uV)	78 dB	56 dB
14 0-14.2	-119 dBm	83 dB	50 dB
21.0-21.2	-118 dBm	91 dB	47 dB
28.0-28.2	-120 dBm (0.23 uV)	100 dB	45 dB



via T3. 100 ohm resistors are again used to obtain correct impedance levels R19 and R20 have the add tional function of absorbing mixer products which are not at the IF, so reducing their amplitude and the danger of degrading dynamic range. A diplexer is therefore not required An individual crystal oscillator is required for each HF band. This method was used to avoid switch ng crystals (a messy business) Also, some crystals require a different circuit arrangement for correct operation. The 1 700 MHz crystal for the 3.5 MHz band requires a Pierce oscillator those for 7.0 to 21 MHz require a Colpitts, and those for the 28 MHz band require an overtone circuit. The crystal frequency applied to the mixer must be very clean to avoid the production of spurious signals, and the reception of harmonic images. For example, on the 7 MHz band the crystal operates on 5 200 MHz. The

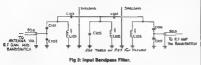
second harmonic of the crystal (10.4 MHz) may mix with an unwanted signal on 8.6 MHz and produce an IF of 1.8 MHz (10.4 – 8.6 = 1.8) The input BPF will do a good job of attenuating the unwanted signal, but some very strong signals exist in that band, and

would be attenuated only 40 or 50 dB, and may appear along with the wanted signals. By reducing the harmonic content of the crystal frequencies, the level of unwanted signals

from this cause will be greatly reduced - in

appears at the output of the mixer. 1 8-2.0 MHz

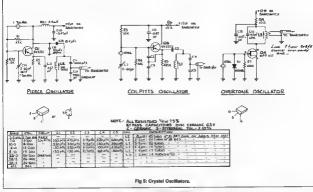
signals (first IF) are coupled to the tunable IF

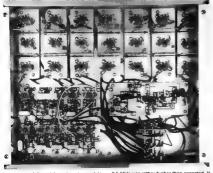


this case about 70 dB. Therefore each crystal FILTER RFCZ +12VI 12 V FROM P.S 4:564 C29 -047µl CZE C 27 047 UF RI2 To BANDSWIRD THESE COMPONENTS CIB IODO ON SOLDER TAG STRIP (+6v 04 R23 3K3 T3 È Re mn. ₹ Reguma 05 111 BANDS/W Q-1 C25 · 047µ8 Ric 110 5-68 1-8- 2-0 MHz FROM XTAL OSC CA 302B BASE VIA BANDSWITCH NOTE: ALL CAPACITORS DISC CERAMIC > 63W ALL RESISTORS 4W 5% EXCEPT R21 COAX RG 174/U or SHALAR T1: 13 to 14 LOOPS 24 B&S BUFILAR ON NEOSID 4527/2/F25 CORE T2,T3; 11 LOOPS 24 645 TRIFILAR ON

NEOSID 4327 | 2 | F25 CORE

Fig 4: Input RF Amplifier/Mixer.





oscillator is followed by a tuned circuit to clean up the oscillator signal before it is applied to the mixer

During final testing of the complete receiver, it was found that the residual noise level of

3.5 MHz was rather higher than expected. It was found that noise from the power supply was being injected into the RF ampfiller via the +12 V rail. This problem was eliminated by the inclusion of RF filter, C26, RFC2, C27 So +12 VF designates a filtered supply.

CONSTRUCTION

The RF amplither and mixer components are accommodated upon the copper side of a home made double sided PCB, and the consiliator assembly upon a second board. It is therefore not necessity to discontinuous and the control of the control of the country of the co

Those who have made the Square-One receiver will have already developed their own way of winding coils upon the Aegis 3510 formers. It is a good idea to firstly select which of the four tags are to be used to terminate the start and finish of each coil and stick to those tags for every coil. This will reduce the likelihood of any problems later on Sufficient wire should be removed from the wire spool before fixing the spool in a vice. The start (top) of the winding may be soldered to the selected tag. With the wire taut, and holding the former at the top and bottom with its axis parallel to the floor, the required number of turns are wound onto the former With the (aver complete, the end (finish) may be firmly wrapped around one of the feet and the wire cut off All coils should be immediately labelled with a pencil upon the tag ring to identify it. Shellac or clear nail varnish must be applied to each winding to hold them in place When dry, the finish ends may be unwranned from the foot, cut to length and soldered to the selected tag. A two or three cm

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		1	4	
Band	C101, 105, 106	C102, 107	C163, 104	L101, 102, 103
18	1000 pF Styro	4700 pF Cer	47 pF Cer	8 uH. 45 turns No 30
3.5	470 pF Styro	2200 pF Cer	22 pF Cer	4.2 µH 26 lurns No 28
70	220 pF Styro	1000 pF Cer	10 pF Cer	2.1 uH: 14 turns No 28
10.0	180 pF Styro	680 pF Cer	6.8 pF Cer	1.5 uH: 17 turns No 24
14.0	120 pF Styro	470 pF Cer	4.7 pF Cer	1.0 vH: 14 turns No 24
21.0	82 pF Styro	330 pF Cer	3.3 pF Cer	0.8 uH: 9 turns No 22
28.0 Wire is B	56 pF NPO Cer 3 S enam. All coils w	220 pF Cer ound on Aegis 3510	2.7 pF Cer O Assemblies	0.5 uH: 7 turns No 22

length of elastic (cotton removed) should be inserted with each slug so that they do not move after adjustment. As up to 31 coils will be required it is cheaper to buy them from the maker, whose address is given at the end of this article. Some spares should be ordered in case of breakages

The RF amp/mixer should present no particular problems. The trifilar broadband transformer is made in the same manner as those in the Square-One T2 and T3 are made as follows. Take three 350 mm lengths of 24 B & S ename, wire lay them parallel to each other, twist them together at one end, and place that end of the group in a vice. Starting at the vice end of the group, draw a cloththrough them to remove any wrinkles. Now twist the free ends together and fix them firmly in the chuck of a hand drill. Turn the drill whilst keeping the wires taut until there are about three twists per cm. then give the drill a tug to set the twists, and remove the twisted group. Carefully thread the group through a Neosid 4327/2/F25 toroidal core until there are about 11 loops. Leave about 2 cm of wire at each end of the winding, and remove about 1 cm of enamel from each wire A multimeter set to ohms can be used to identify the separate windings. It is essential that the end of one winding be connected to the start of another winding to form the centre tap for the secondary of T2, and the primary of T3 Brislar transformer T1 is made in a similar manner Once again it is essential that the end of one winding is connected to the start of the other winding to form the centre tap.

The crystal oscillator board assembly can accommodate eight fundamental oscillators (Pierce and Colpitts) and two overtone oscillators. The final number of oscillators depends on the needs of the user. The photo shows the oscillator board fitted with one Pierce for the 3.5 MHz band, seven Colpitts (with crystals installed for 7, 10, 14 and 21 MHz bands), leaving three spare, and one overtone crystal installed for 28 MHz leaving one spare The crystal frequencies required for each band are calculated: Y = f - 1.8 where f is the lowest frequency of the band required, eq to tune 28.0 to 28.2; Y = 28 1 8 = 26.200 MHz

It was originally stated in the Square-One article that a 3-section, 11 position wafer switch would be required for the bandswitch However, as it turned out, a 4-section, 11 position switch was required. The acquisition of this switch must be left to the resources of the individual although one or two sources exist it may be necessary to buy a 3 x 11 and a 1 x 11 switch and add the bank from the 1 x 11 to the 3 x 11 switch. To do this undo the Iwo rear nuts and carefully remove all the wafers and spacers. Note this positioning of the I tile. fibre washers and the prentation of the waters. Do the same with the 1 x 11 switch Cut two of the spacers in half. This will a low the switch to be re-assembled as a 4 x 11 one Make the wafer nearest the front that which switches the crystal oscillators. The next wafer - close spaced, should be that which switches the +12 VF supply to the oscillators This leaves plenty of room to terminate the miniature coax s for the input BPF's As will be seen in the photo in Part 1, a square piece of PCB should be inserted between the wafers for the BPF, and used to terminate the braids of each coax and provide a shield between these two waters. The output side of the BPF's should terminate on the rear wafer. The clicker plate itself may be used to terminate the braids of the coax's which supply the oscillator signals RG174/U miniature coax may be used for all the coax runs. About seven metres will be required if all bands are to be provided. Ribbon cable was used for the +12 VF supplies to the oscillator assembly

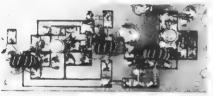
Each PCB and BPF may be mounted upon the under chassis area of the Square-One receiver with threaded spacers. These may be fixed to the chassis with Araldite to save the problem of drilling holes in the chassis with assemblies already mounted on the other side A short length of braid should be soldered between the oscillator assembly and the RF amplifies

The crystals should be socketed A cheap source of sockets are pins removed from miniature tube sockets. Slip the pins onto an old crystal to help with so dering the pins to the PCB with the correct spacing

ALIGNMENT

A signal generator which covers the HF bands is desirable, but not essential to get the converter section going If a generator is available apply about 10 uV to the input with the RF gain pot set to maximum and see if the signal can be found where expected. The middle section of each SPF will provide the sharpest peak when tuned and this one should be tweaked first to obtain a signal for each band being so adjusted. The generator level may be steadily reduced whilst adjusting the three sections of the BPF. The two outside sections will be rather broad in their response Check the sensitivity at each end (18 and 2 0 MHz) to make sure the sensitivity reponse is reasonably fiat. Some compromise in settings may be necessary to obtain gain flatness

If no signal can be obtained at all check that the oscillator for the problem band is operating. The trimming capacitor for the Colpitts circuits must have some C engaged in order for the oscillator to work. With a weak signal applied, it should be possible to peak the oscillator coil for strongest signal response for each band. It may be found that the overtone circuit will not work immediately



Try adjusting the slug. A point should be reached where the oscillator 'plops into life, and there will be another point where it will drop out again. Set the slug at some point between these limits where the signal peaks. Check that the oscillator will start each time it is switched out and in It shill be found that the actual frequency will now be very close to their marked on the crystal.

If no generator is available; the calibrator signal (from the Square-One) may be used to align each band. The 50 kHz signals are strong enough on most harmous to align.

something to be heard. Pick a fairly shows one and peak the BPF coils as described above. The escalator coils may be be peaked using the calibrator span. When the BPF is have been adjusted, the crystal socillators may be be trought not to frequency, either with the help of a counter, or more smaply by adjusting each crystal timming capacitor so that each band timef up with the cabinets signal at the same point from band to band. It will not be possible to accurately align the 28 MHz crystal, but the error will be

small, and the cal pot on the Square-One will allow for this.

The converter may also be adjusted using signals and noise from an antenna. However this method is more difficult of course due to fading etc. With a reasonable antenna connected to the input, the receiver should sound lively. Intovided in focuse that the chosen

band is in fair shape
Please send a large SAE for a copy of circuit board activork and component location diagrams to the address stated at the beginning of this article.

Photography: Peter Dalkston and Ken McLachlan Relevances. Solid-State Design — ARRI. ARRI. Handbook. 1982 and 1980. Redio Handbook.—Editors & Engineers. Redio: Computers stor. Handbook.—

Parts sources Communication remiodors
Parts sources FCs Aegis (mekers), Megraths
Cool formers, RFCs Aegis (mekers), Megraths
Toronical Megraths Elistronics, Welson Wynne,
CA3022 Megraths, Elistronics Rod Inving
Band Swinth, Redio Parts, Megraths
Crystals, J & A Crystale
Crystals, J & A Crystale
Coras Aeme Electronics, Elistronics
Enamel Wire Megraths, Elistronics
Megraths S & Rebeeth IS Melocume, 3000.

Enamel Wire Magraths, Elvatronics Magraths 58 of Resketh SI Melbourne, 3000 Elistronics 289 Le Trobs 51, Melbourne, 3000 Aegis 141 Charlamas SI, Fertide 3078 Rod Irung, 48 A Becketh SI, Melbourne, 3000 Radio Parts 55 Spencer SI Melbourne, 3000 Maltin Wyrone, 32 Felicon SI, Crows Nael 2055, J & A Crystats 20 Delville SI, Mentone, 3194 Acme Electronics, 2 Canterbury Rd, Kilayth, 3137

MULTI-PIN PLUGS FOR SURPLUS GEAR

John Hassell, VK6ZGF/NXX

Most military surplus gear is inter-connected by cables with multi-pin plugs. Usually by the time the gear arrives in the amateur shack the essential cables and plugs are long missing and the equipment has to be haywired together to get it working.

Here is a simple way to make multi-pin plugs, using the socket in the equipment as a template for the pin spacings.

- Tape a square of waxed lunch wrap firmly over the socket.
 Cut from a suitable sause of bare country wire the required number of aims. The length
- of the pins will vary with the 15pe of socket, but about 2 cm will do for most opplications. Trim as needed later. Select a wire gauge to give a firm flt in the socket holes.
- 3 Push the wire pins through the wax paper into the socket holes. Check that the pins do not protrude too far through the socket
- 4 Find a plastic jar or wide mouthed plastic bottle with plastic screw lid. The diameter of the jar should be slightly larger than the socket. Cut the top off the jar about 1.5 cm down from the lid. Drill a hole through the lid to take the cable, and grommer if needed
- 5 Place the top section from the jar over the socket, centre carefully and tape in place Ensure the threaded end is uppermost.
- 6 Mix some epoxy filler, (I use Plasti Bond.) Pour the epoxy into the jar section and fill until about 5 mm of the pins remain exposed. Allow to set, then withdraw the newly-made vlus from the socket. Peel off the way source.
- 7 Slide the jar lid on to the cable Solder the cable wires to the plug pins. Screw the lid on to the body of the now-completed plug.

NOTE Many multi-pin plugs and sockets use a keyed centre pin to ensure that the plug and socket are mated correctly. As our new plug lacks this refinement it is best to mark with paint the correct orientation of the plue in the socket.





Figure 2 and 3.



Figure 4.



Figure 5.

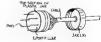


Figure 6

DX — WHO PAYS?

Neil Penfold VK6NE 388 Huntriss Road, Woodlands, WA 6018

DXers of the amateur fraternity all have their answers to the questions of how to obtain QSL cards from the desired contact, but let us try and have some answers to the questions raised by the DX station.

An amateur decides to visit an island which has no resident amateur population, for a three months holiday. The island has only recently gained lits independence and

for a three months holiday. The island has only recently gained its independence and is off the beaten tourist track. After various flights by aircraft of vintage years and the customs people being very

years and the customs people being very curious about the transceiver, our amateur is duly installed in a comfortable room overlooking the beach. There is no TV or other entertainment after dinner and as our man is of sober habits and lives a quiet life at home, this looks like a great location for

a quiet holiday

After dinner he decides to try and listen for amsteur contacts. The usual long wire strung to a nearby coconut tree. through a tuner to the transceiver and he is ready. The band seems quiet enough — usual gaggle of violes between 200 and 210, a not operating a few killohertz lower, no recognisable DX callaigns so let's try 185, as he's in a remote location which he considers should count as 0.

His first hour of operating brings a pilithor of calls, all calling at once, in an effort to make the contact. This is great. At home on the maintaind his calling of "Co-DN" has only produced one new country in six months and many calls from the more populous areas of the world. Now already in the log are four relatively rare stations and one ho's never heard before

Granted, there hasn't been anyone operating from this island during the last six years but he hasn't anticipated being

After four hours and eight pages of his log book used, propagation fizzles out and he's ready for bed, contemplating how great it was to be wanted by so many operators. The questions of "who is your QSL manager" and the repy "QSL to my home call" really impressed him. And so it's off to sleep thinking of how he may help his new found fellow DXers by doing some more operating. Perhaps more than he originally thought when he carried his transceiver to the island and the muddling about obtaining a licence to operate. Maybe this is what DXing is really about, not sitting at home hoping some rare station will come back to his "CQ-DX" call or trying to compete with everyone else that wants him too, some of whom are always bragging about how they worked a rare one which he didn't even hear, let alone work

The weather is great, accommodation and meals fantastic, what more could one want from life, but the three months holiday starts to zip by, with the QSOs mounting every day. As experience is gained in handling the dog piles the QSO rate increases. The suntain is now deeply embedded and his middle appears a little.

more rolund than when he arrived on the

Departure day duly arrives, clothes and gaz are packed along with all blose log sheets. Never expecting to have ao many contacts, the lone log book he brought with him had to be supplemented with hotel stationary, small school exercise books obtained from the local co-operative store and the back of a wall calendar—the only writing material to be found one evening.

when all other paper had run out On the plane home, watching the pretty hosties and sipping his last duty free drink, the figure of 19,256 GSOs kept appearing in his mind Of his four years of amateur activity, his total GSOs at home had only filled one and a half log books — nothing compared to the paperwork in his luggage Home sweet home!! — One of the first

Home sweet home!! — One of the first sights to greet him in the shack was a grocery carton. Mum had put all his mail in it and it was half full. Mum had already mentioned that the postman had asked "what was Bob selling".

Slitting open a few envelopes and noting their contacts. Bob was amazed There were two with US dollar bills, three with four International Reply Coupons (IRC) in each and two with just cards and a note on the bottom of the card reading "peo QSL direct." There must be over two hundred

envelopes in the carton. The next day brings another deluge of mail and by the end of the first week at home, three hundred and seventy five envelopes have disgorged nearly four hundred CSL cards, \$155 US, three hundred and forty SAE, five hundred and ten IRCs, some SASEs and mint foreign stamps of various countries. He opened a stamps of various countries. He opened as

Pandora's Box Better have some QSL cards printed pretty quick or the Fraud Squad will be around asking questions. Now - what kind of card to print - lets have a look at some good DX cards already received from overseas. Now that's a good one from VPo - looks a little like where the operation took place and in the holiday slides are one or two that could be used for a good card picture. Now for some prices to get the cards printed. Wow - \$875 for five thousand cards. Suppose that will have to do and after all I've already collected \$350 from incoming mail so far. That will surely be enough cards to answer all incoming mail

Six months later — with the incoming mail drying up, the intrepid holiday DXer begins to count the cost. Practically all his spare time has been taken up with mail opening, sorting, checking contacts in the log, writing return QSLs, enveloping and posting. The local postal clerk tends to shun him now if possible — wonder why.

After all he only had to count and stampones (Some IRCs wherever than was any pasting to be done, then occasionally he did have to look up the Postal Guide to see if a cardian place existed and how much it cost to armsal selfer there. Apparently no one else in the district uses IRCs and no one else in the district uses IRCs and no one clean the district use IRCs and no one of the district us

During the last six months, there was only about sixty OSLs received via the bureau. That's good, now to sum up our work to date

5000

4300

\$6100

\$2000

\$8100

\$ 900

\$4320

Credit — Envelopes received QSLs received SAE received

IRC at 40 cents each \$1 US Total

Debit — Postage Print Cards & Envelopes Total

Balance —

Now everyone will say the holiday paid for itself and at the moment his does look to be so. However, time passes and at the following WIA meetings the CSL officer keeps handing over thick weds of cards from the incoming burses I heck! with answering the direct cards our frend had compellon about the burses to another droppilon about the burses to another seems of the properties of the \$855 for five thousand cards which should be enough to statify the deman

Twelve months after that glorious holiday on the beautiful tropical size the tide of bureau cards is almost as strong as the direct QSLs were in those first heactic direct which were in those first heactic direct which was not as a strong as the bear five thousand cards sent out at 2 cents a card and the kity is oloxing quite different to the early days Bureau operation and card printing have reduced the profit to \$3000. Still that is quite a handsome pricht in Colonia gover that was enjoyed— or was at the process of the colonia gover that was enjoyed— or was at the colonia gover that was enjoyed— or was at the colonia gover that was enjoyed— or was at the colonia gover that was enjoyed— or was at the colonia gover that was enjoyed— or was at the colonia gover that was enjoyed— or was at the colonia gover that was enjoyed— or was at the colonia government.

The suntan soon disappeared because weekends were spentanswering OSLs and his middle aspanded because of tack of his middle aspanded because of tack of the sever, was her favourite evening TV programme jittening as prote

RUSSIAN FOR ENGLISH SPEAKING RADIO **AMATEURS**

Ian Foster, VK3ST Box 77 Bairnsdale, Vic 3875

Russian shown in this article has not been spelt correctly and this has been done deliberately in order that the pronunciation could be taken literally straight from the text. The other reason why this has been done is that when consulting the various RUSSIAN/ENGLISH guides that are available, it has been found that if the Russian phrases in general as printed in these books are not understood by European Russians, they were perhaps intended for confusion rather than assistance

The following phrases will be sufficient to at least allow a very simple contact to be realised. and it is certainly not intended as a guide for the experienced linguist or Russian anguage expert

It should be remembered that if a contact is to be attempted, one must speak slowly as the accents are worlds apart let alone the anguages and in general I have found nearly all Russian speaking people only too willing to assist in respect of language difficulties. provided of course, that they know what is required of them Remember, most of the English speaking Russians have a limited English vocabulary and also have difficulty in understanding if you speak too fast.

From January to May 1983, I have had over 400 contacts with stations in European Russia and at least 200 of those contacts have been all in the Russian anguage I might add that I on y started to learn the Russian required to establish contact in January and for a person who was a very poor French scholar many years ago in school, I have found it to be a very rewarding and challenging exercise

The Russian alphabet is quite different to our own as are various vowel groups and anyof the obrases shown in this article are shown purely for pronunciation. Any attempt to write Russian, using the methods shown here, to a Russian speak no person will, quite probably. send the recipient into peals of uncontrollable laughter If you would like to write in Russian, then I would suggest a more serious look at appropriate courses on the subject as this is not the intent of this article

STLY	, Th	ßΕ	RI	JS	SIA	N PI	HONETIC
ĀNNA	١					M -	MARIA_
HORTS	٠,,					N	NICKOLT
CENT	RÁŁ	١.,				P -	PARVIL
DIMA							SHOOGAR*
FEEDI	EH.					S-	SEGAY
GRIGO	RY					T-	TAKYÁNA
IVÁN						V -	Z00K
IVÁN	KRO	SK'	Υ.			W -	VASILY
KOST	YΑ					X -	ZNÄK
LŰBA						Y -	EEGRÉK
						Z-	ZEENA
	ANNA BORIS CENT DIMA FLEN GRIGG HARI IVAN IVAN KOST	ANNA BORÎS CENTRÁL DÎMA ELÊNA FÉEDER GRIGÓRY HARITON IVÂN IVÂN KRO KŰSTYA	ANNA BORTS CENTRÁLI DÍMA ELÉNA FÉEDEH GRIGÓRY HARITON IVÁN IVÁN KÓSTYA LÍTBA	HABET ÁNNA BORÍS CENTRÁLI DÍMA ELÉNA FÉEDER GRIGÓRY HARITON IVÁN IVÁN KROSKY KÖSTYA	HABET ÁNNA BORÍS CENTRÁLI JÍMA ELÉNA ELÉNA FÉEDER GRISÖNY HARITON IVÁN KÖSTYA LÜBA	HABET ÁNNA BORIS BORIS CENTRÁLI DÍMA ELÉNA FÉEDER GRIZÓRY HARITON IVÁN IVÁN KROSKY KÖSTYA LÍTRA	ÁNNA M — BORÍS N — CENTRÁLI P —

* Liable to be	confused with	"Sugar" for S

RUSSIAN NUMBERS	
0 - NULL	7 — SYÉ-EM
1 — 00ÎN	8 — VŐSYEM
2 - DVA	
3 — TREE	
4 — CHITÉRYA	
5 — PYAT	
6 — SHEST	30 — TRÍDSAT
	100 - STO

73 - SYE-FM DYFSIT TREE

The following is a typical very short QSO between VK3ST and UK9ACP The English will be first to give the guide followed by the "Russian" to be spoken. For the sake of brevity, only the transmission from VK3ST is given and responses will be able to be gauged with practice and useage QRZ . . . Who is calling me? KTO MENYÁ PRIZIVÁYET?

("ORZ" works just as well)

Thankyou, UK9ACP this is VK3ST SPASIBA UNIFORM KILO DYEVIT ALPHA CHARLIE POPPA YA VICTOR KILO TREE SIERRA TANGO

(International Phonetics Preferred) Good morning - DŐBRI ŐOTRA Good alternoon - DOBRI DEEN Good evening - DOBRI VYECHER

My name is la MANYA ZOVOOT (AN (spell phonetically) (INDIA ALPHA NOVEMBER)

Your signals are 5 9 VASH SIGNAL PYAT DYÉVIT

My crty/town is MOY GOOROD

My transceiver is a Drake TR7 and my antenna is a four element yag MOY TRÂNSCEIVER, DRAKE TAKYÁNA ROMÁN SYÉ-EM, MOY ANTÉNNA CHITÉRYE ELEMÉNTA YÁGI

UK9ACP this is VK3ST over OOLYÅRNA KÖSTYA DYĒVIT ÁNNA CENTRÁLI PARVÍL YA ZOOK KÖSTYA TREE SÉGAY TAKYANA, PRIÓN Listen to the reply and with care you should be able to piece together the response using the information already given

UK9ACP this is VK3ST, thankyou my friend Gene, excellent OOLYÁRNA KÖSTYA DYÉVIT ÁNNA CENTRÁLI PARVIL YA ZOOK KÖSTYA TREE

SEGAY TAKYANA SPASIBA MY DROOK GENE, PRIKRÁSNA

Thankyou for the signals (report) 5 9 SPASIBA ZA SIGNAL PYAT DYEVIT Thankyou my friend Gene for the beaut

MOY DROOK GENE, SPASIBA ZA HOR-OSIA SE-ĀZ

I will OSL 100% via the bureau to Moscow OSL STO PROSYENTOV BUREAU MOSKVA Until we meet again on the air, good luck to you my friend DO-NOV-OY VSTRÉTCHIE VA VÉERIE VSYEVŐ VAM DŐBROVŐ MOY DROOK

SYÉ-EM DYÉSIT TREE LIKSACP this is VK3ST Goodbye, thankyou

OOLYÁRNA KÖSTYA DYÉVIT ÁNNA CENTRÂLIPARVÎL YA ZOOKKÔSTYA TREE SÊGAY TAKYÂNA. DOS-VID-ÂNIA SPASIBA (BOLSHYÖYE) The above should be enough to get you

through a very basic QSO and remember that most Russians speak a limited amount of English so don't be afraid to change language if you lose track can't understand or want to know/respond to some other comment. Some other useful phrases that may help are How do you say in Russian the word (or phrase) 'EAST'

KAK BÖODET PARÜSKI "EAST" (last work is english for translation or KAK PA-RUSSKI SLOV 'EAST'

Good HOR-OSHA-YO (HOROSHO) I am sorry

YA Ó-CHEN SOZ-OLÁYOO What is your callsign? KAKOYI VASH POZNIVOY?

Please PAZHÁOOSTA

Please give me your name? (QTH)
PAZHÃOOSTA DAÎTYE SNÔWA VASH
ĨMYA? (GÓOROD)

Repeat your name? (QTH)
POV-TOR-ITA SNOWA VASH IMYA?
(GOOROD)

Thankyou very much my friend

BOLSHOYE SPASIBA MOY DROOK

I hope to see you again.
YA, NAD-E-YOOS RAZ-GOV-ÄRIVAT
SVÄMI SNÖWA
I — YA ... Yes — DA ... No NIET ...

I — YA ... Yes — DA .. No NIET ... Friends (plural) — DROOZ-YĀ... If speaking to a lady, one should say "MOYĀ PADRŌOGA" My friend

The temperature is 20 degrees (above freezing)
DVÄTSAD GRA-DÜSAF (TIPLÄ) or TEM-PERATOĞRA DVÄDSAT GRADOĞSOF

Today is good weather SIVÕD-NYA HOR-ÕSHO-YA PA-GÕ-DA

SIVOD-NYA HOR-OSHO-YA PA-GO-DA Today it is

TOUBY N IS SIVOD-NYA (Warm) TIPLO ... (Yery hot) OCHEN ZHÄRKO ... (Hot) ZSÄRKO ... (COOL) PRA-KHLÄDNA ... (COId) KHOLODNA Please speak slowly

PASZÁLSTA GAVA-RÍ-TYE M-YED-LYÉNNA I do not understand you

YA NYE PANI-MĀYÚ VAS

To those of you who are willing to give it a go, I am sure that you will find that contrary to popular belief, learning to use a language can be very satisfying and will certainly put some value on those OSL cards that are received via Box 86 in Moscow

In conclusion, I would like to thank Gene Shoumat, UARAPA and the many other Russian speaking amateurs who have assisted the dividing minital learning period and I feel that a special bond grows and develops between those who try to help others and this period to the state of the state of the state ever possible. Remember that we are in a specialist area that involves communication and communicate and learn from one another

EDITOR'S NOTE

Thanks are due to R Hancock, VK5AFZ, for checking and, where necessary, correcting a few phonetic equivalents and also for the following notes:

Use of the Russian phonetic eliphebet is not really necessary, as ell Russian anatieurs are lamilar with the international Phonetic Alphabet However, the Russian system is used to a greater extent between Russians used to a greater extent between Russians to a greater extent between Russians of the Company of the Particle State of the Company of the Particle State of the International Phonetics on all occasions for the sake of uniformity and to avoid confusion. Also, a remnater that IV stations conducting the Company of the International Phonetics of t

Also, a reminder that VK stations conducting a QSO in a foreign language are required to identify their call letters in English at the appropriate intervals. Identification in the foreign language only is not sufficient

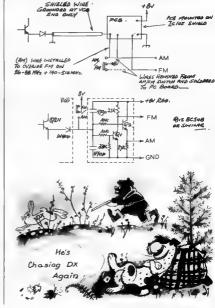
SERVICE BULLETIN or do your own repairs??

. MODIFICATION TO ALLOW AUTOMATIC MODE SWITCHING

This modification causes the SX200N to automatically switch to AM mode when any Airband frequency in the 108 to 139 995 MHz frequency range (band A4) is programmed into it. Additionally, the front panel mounted AM/FM switch allows manual AM override on any of the other bands (i.e. A1, 2, 3, 5, 6, 6). So that the

manual AM/FM selection may be used on all bands except A4 where the user is restricted to operation in the AM mode only.

This information has been kindly supplied by GFS Electronic Imports, 15 McKeon Road, Mitcham 3132





MORSE CODE AND YOUR COMPUTER

Alan MacLean, VK3ASL 1/138 Bluff Road Black Rock, Vic 3193

About two years ago. I became interested in computers and bought myself a TRS-80. There were a number of other computers available and a wide range of prices. Knowing nothing about any of them, I settled for the TRS-80 on the recommendation of a friend who had one

I learned to programme it by following the excellent instructional manual which came with it, but I found it he ped to study a couple of other books on basic programming which were available from the Tandy Store.

I stem computers could be used for sending and serving Morsie color and RTTY but had no idea how to write a programme to do this and acquired about jetting a programme a ready written. The programmes advertised by various soltware suppliers esemed to be limited to calculating the lengths of elements for antennas or for exepting alog book. There were flatfware and ordiversip selection that the could be supplied to the contract of the country of the coun

Finally, I decided to write a programme myself. I looked for guidance in various magazine articles but the authors were theorising with algorithms about how it could be done or giving programmes in machine language which I didn't understand I'm articity's self-laught Basc only programmer.

- There seemed to be three problems

 how to generate Morse

 how to decode Morse
- how to connect (interface) the computer to

If Jound out that, without some more expensive hardware, the TRS-9 could only communicate with the outside world through its connections to the cassette layer excerder used for loading and storing programmes from our form of the connections is to the remote plug of the recorder's motor during recording or plug-back is get to work to write a programme that would turn on the motor for the length of a dit run it off for the same then than it back on for the length of a dit run it off for the same then than it back on for the length of a dit for the control than the control than the control that the control of the tage proporter that would have sent the

The instruction * OUT 255,04" turns on the motor and **OUT 255,0" turns it off again A delay loop is needed to destinate how long the motor is on or off As we are not using the motor; its really a matter of how long the cassette relay in the computer is turned on or off, which governs how long the oscillator is

I found by experimenting that the Morse speed in WMP when divided into 400 gave the number of loops required for a delay equal to one dit at that speed. I use the expression "X1+(400/BI)", where "X1" is the number of loops and "B1" is the number of tops and "B1" is the number of WPM. Thus the instruction needed to send a difficult ad difficult in the struction needed to send a difficult page 30 per 10 per

each dil or dah, so the next instruction would be 20 FOR I=1 TO X1 NEXT I

Biccause a dah is fitnee times as long as a dit. the loop needs to be of a length equal to XY [X1 multiplied by 3 for those who don't read Basic; So a dah followed by a space would be sent by 30 OUT 255.04 FOR 1=1 TO XY 3 NEXT I OUT 255,0 FOR 1=1 TO XY 3 NEXT I OUT 255,0 FOR 1=1 TO XY 1 NEXT I OUT 255,0 FOR 1=1 TO XY 1 NEXT I OUT 255,0 FOR 1=1 TO XY 1 NEXT I OUT 255,0 FOR 1=1 TO XY 1 NEXT I OUT 255,0 FOR 1=1 TO XY 1 NEXT I OUT 255,0 FOR 1=1 TO XY 1 NEXT I OUT 255,0 FOR 1=1 TO XY 1 NEXT I SY 1 NEXT I OUT 255,0 FOR 1=1 TO XY 1 NEXT I SY 1 NEX

If we put a space the length of 3 DITS after the DAH, the letter A will be sent continuously, so we II amend line 40 to read 40 FOR I=1 TO X1'3 NEXT I GO TO 10

The next thing is to construct a peec of hardware, so that you can hear the Morse sent. For this you will need a small relay, a bettery to run it, an audio oscillator module and a separate battery if it happens to use a different voltage from the relay A small speaker will allow you to hear the oscillator

Make up the hardware, plug in the remole plug, and enter the programme, if you have a TRS-80 you should now be able to hear TRS-80 you should now be able to hear continuous A3. If you don't have a TRS-80, but your computer has connections for an external tape recorder, rarge yourkil you find out the number of its cassetier port acceptance of the programme. If your computer doesn't have such a connection, I'm alraid I don't know what you can do what you can do what you can do what you can do what you can be the programme. If your computer doesn't have such a connection, I'm alraid I don't know what you can do

Being able to send a lot of A's will not be of much practical use, so a bit more programming is needed to send all the other letters of the alphabet as well as figures and punctuation.

I might say at this stage that since writing my programme. I have learned of several other ways to generate Morse with a programme in Basse, and know that there are a number of machine language programmes that will do it. However, this one is the only one that I have tired, so 'I'll stick to what I

hnow The next step is to write sub-routines for sending one, two and three dist, and one, two and three dist, and one, two will be made up of one or more of these. Then we can input a letter to the computer by typing it on the keyboard, and have the computer say to steel "it this is an A, then computer say to steel" if this is an A, then and return for the next letter. For other letter it would be GOSUB for a dash then a dit them and return for the next letter. For the letter of it would be GOSUB for a dash then a dit them a dash and another off it The input of the letter is achieved by the INSCTS function of the out which letter has been present, then calls

up the sub-routine for generating the dits and dahs for that letter

If you have a look at the programme listing you will see that line 120 is the INKEY\$ function which determines which key has been pressed Line 130 converts that letter to

its ASCII equivalent (that is — a number which means a letter)
Lines 130 and 131 convert the ASCII numbers so that A to Z equals 1 to 28 and 0 to

numbers so that A to Z equals 1 to 26 and 0 to 9 equals 27 to 36 Line 137 causes the computer to go to one

of the lines between 310 and 650 winth means the appropriate letter of light or That line then calls up the sub-routine that generates the Anyeas for his letter or light of Much the same Anyeas for his letter or light of the same sense that the sub-routine that generates some useful phrease and purctuation, etc., and line 160 which sends eight cits to indicate an error. The other parts of the toll include anyeas of the sub-routine sense of th

The pext part of the programme is a bit more difficult. This is the part that decodes Morse. The following short version of the decode portion, which has explanatory statements may help you to understand it Even though I wrote it. I have to think pretty hard myself to work out what it is doing I mentioned earlier that there are other programmes available to send Morse. As well there are programmes you can buy to decode Morse The ones I have seen are either in machine language so I don't know what is happening or they are in Basic and don't work At least. I haven't been able to make them work - and I believe that I'm not alone in this, Anyway, mine does work - if the Morse comes from a code oscillator - but I have problems if the Morse comes off the air To some extent this is due to static and random noise, but I think that to a arge extent, it is due to badly keyed Morse

Anyway programme 1 is a short listing of the decode section of the programme which has Rem statements which may help you to understand what it is doing

The programme senses whether there is a signal at the input port number 25s, which is signal at the input port number 25s, which is the cassette input to the computer if the value of that port is 255 then there is a signal and if there is no signal, the value is 127. If don't merally know why, it just works that way. Then the time that the a gnal is there is researced to find out if the signal is long or short : That is a dit or a dath in between dits and daths the scaces are measured to find out.

15 INPUT "SPEED IN W.P.M.":W≎ REM** OMIT WHEN MERGED WITH SEND ROUTINE, WHICH HA S A SIMILAR INPUT 16 Z=1744/48*1/W≳ REM** Z=LENGTH OF ONE DIT. LINES 30+31 & 40+41 LOOP 1744 TIMES

16 Z=1744/48%1/W: REM** Z=LENGTH OF ONE DIT, LINES 30+31 % 40+41 LOOP 1744 TIMES IN A MINUTE. THE LENGTH OF ONE WORD IS EDUAL TO 48 DITS AT 1 W.P.M. W IS THE N UMBER OF W.P.M.

21 AS=INKEYS:IFAS="5"GOTO 15 REM** HIT \$ TO CHANGE SPEED.

22 REM IF AS="#" GOTO ** START OF 'SEND' ROUTINE 23 V=V+1:IF U=1 AND V>=Z+5 THEN PRINT CHR\$(32);:U=0: REM+*PRINTS A SPACE AT THE

END OF A WORD.

25 IF INP(255)=127 THEN 21 ELSE 40 REMARKLOOKS TO SEE IF THERE IS A CHANGE OF SPE

ED OR RETURN TO SEND ROUTINE. 30 V=0:X=0:Y=Y+1::IFY=>Z*3 THEN 101 REM** IF SPACE IS EQUAL TO 3 DITS OR MORE, L

ETTER IS COMPLETE, SO PRINT IT.

31 IFINP(255) = 127 GOTO30 REM **MEASURES TIME KEY IS UP.

OF 40+41 SAME AS 30+31 - 1744 PER MINUTE.

60 IF X>=ZAND X<Z*3 THEN T\$="." 70 IF X>≈Z*3 THEN T\$="-"

80 W\$=W\$+T\$:GOTO30 REM** ACCUMULATES THE DITS AND DAHS UNTIL A LETTER IS COMPLET

101 IF Ws=".-"THEN PRINT"A"::GDT0150

102 IF Ws= -..."THEN PRINT"B"::GOTD150 103 IF Ws="-.-."THEN PRINT"C"::GOTD150

104 REM LINES 104-140 COVER D-Z AND 1-0

141 IF W\$="....."THEN PRINT"ERROR";:GOTO150

150 Ws="file1

160 Y=0:GOTO21 REM** GOES TO LOOK FOR THE NEXT LETTER.

PROGRAMME 1

whether they are spaces between symbols (one dit length) letters (one dah length) or words (five d.t lengths).

if you fry the programme and it doesn't seem to work — particutarly you get all old. E's, It so r'S's — change the val. e. of Wa hittleaf a time until it comes good. However unless you have a source of good clear Morse w thout any state or random noise, you'll get some funny results. The receive programme works quite well on Morse generated by the send portion of the programme and recorded on tape for atter playsack.

That brings us to the next point of how you

get the received Morse into the computer so that you can decode it.

Morse recorded on tape can just be put in through the normal cassette connection to the computer. To hook up a rig. it would proably only be necessary to take a lead from the phone jack or extension speaker soxed, or even by a tip across the voice coil.

A small piece of hardware.

of the speaker, so long as the audio level is the same as it would be if the audio were coming from the cassette recorder. To be on the safe side, I feed the receiver audio into the Aux socked of the tape recorder, which is in the Record mode and has the Remote plug inserted so that the tape won't run. It's best to use the very start of the tape, where there is nothing recorded. That way, the computer is nothing recorded. That way, the computer is

nothing recorded. That way, the computer is looking into something it is used to. To record Morse, simply connect the voice oscillator into the Aux socket of the tape recorder

To connect the computer to the r.g to transmit Morse on the air, connect the spare set of contacts (the normally open ones) on the relay in the piece of hardware mentioned earlier to the key jack of your r.g

No doubt, the receive portion of the programme would work better if it was in machine anguisge but I don't know how to do that You may thruk that the sand portion to a bit cumbersome with air those GOSUB's However, it a written and it works. If you do not do it differently, but shift that the same with any project we attempt?

If you would like a copy of the programme on cassette tape, I'll be glad to supply it — just send me a Jiffy beg and enclose a cassette tape, your name and address and return postage.

coil of the speaker used with the audio

Computer Programme for Morse Code next page . . .

ompata rrogrammo tor motor occurrent page.

AR



OLYMPIC GAMES 1984 Amateurs in California with the numeral 6 in their call sign will have the opportunity

6 in their call sign will have the opportunity to commemorate the 23rd Olympiad in 1984 during the months of July and August

The FCC will permit the amateurs to substitute the number 6 with either "23" for the 23rd Olympiad or "84" on a voluntary basis.

from The ARRL Letter, Vol 2 No 20.

NEW AWARD

The "Lower Eyre Peninsula Amateur Radio Club Inc.", based at Port Lincoln, on Lower Eyre Peninsula, will have the official opening of it's new club facilities on Sunday, 29th January, 1984.

To mark the occasion, a first ever Eyre Pennsula Award will be issued with a special endorsement for opening day. The official opening of the club rooms and the launching of the award will coincide with the city's annual "Tunarema Fastival".

```
10 'TO CHANGE CALL SIGN EDIT LINES 70, 1010 AND 1066
20 CLS
30 PRINT"
                                                                                    4000MORSE CODE***"1/4/83.
35 'WRITTEN BY ALAN MACLEAN, VK3ASL, QTHR.
40 INPUT"INSERT SPEED REQUIRED IN WORDS PER MINUTE"; B1
50 X1=(400/B1)
60 PRINT"TUNE
                                                 1 .
                                                                                    #.
                                                            SEND
                                                                                             CHANGE SPEED
                                                                                                                                  $.
                                                                                                                                             RECEIVE
70 PRINT"COMMENCE
                                               Ec.,
                                                           CALL CO
                                                                                              FROM
                                                                                                                                   (.
                                                                                                                                              VK3ASL
                                                                                                                                                                     ).
80 PRINT"END OVER *-
                                                           BREAK
                                                                                  =.
                                                                                              END MESSAGE
                                                                                                                                   e.
                                                                                                                                              ERROR
                                                                                                                                                                     +
90 PRINT"TYPE T TO SEND MESSAGE ENTERED IN LINES 910 AND 960"
110 P1=0:K=0:J=0:Q1=0:J1=0:R1=0
120 B$=[NKEY$: IFB$=""THEN12G
130 A1=ASC(B$): IFA1>64ANDA1<91THEN A1=A1-64:GDTD137
131 IFA1:47ANDAL<58THENA1=A1-21:60TD137
132 IF A1=32 THEN GOTO 300 ELSE 139
137 DN A1 GDTD 310,320,330,340,350,360,370,380,390.400,410,420,430,440,450,460,4
70, 480, 490, 500, 510, 520, 530, 540, 550, 565, 570, 580, 590, 600, 610, 620, 630, 640, 650
139 IF B$="1"BOSUB800:60T0110
140 IF Rs="#"THENPRINTCHR$(10)"***SENDING****150TD110
150 IF B#="#"BOT020
160 IFB$= '%"BDTD1120
170 IFB$="%"GOSUB740:GOSUB710:GOSUB740:GOSUB710:GOSUB740:GOTO670
180 IFB$="" "THENQ1=1:60T01000
190 IFB$="("GOSUB740:GOSUB710:GOSUB710:GOSUB780:GOSUB710:GOTO670
200 IFB$=")"THEN R1=1:GBTB1050
210 IFB$="* 'GOSUB710: GOSUB740: GOSUB710: GOSUB740: GOSUB710: GOTO670
220 IFB*="="GOSUB740:GOSUB730:GOSUB740:GOTD670
 230 IF8*='@"GOSUB730:GOSUB740:GOSUB710:GOSUB740:GOTO670
240 IFB#=". 'GOSUB750: GOSUB720: GOSUB750: GOT0670
250 IFB$="."GOSLB710:GOSUB740:GOSUB710:GOSUB740:GOSUB710:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:GOSUB740:
260 IFB$="?"GOSUB720:GOSUB750:GOSUB720:GOTO670
270 IFB$="/"GDSUB740:GDSUB720:GDSUB740:GQSUB710:GDTD670
280 IFB#="+"GDSUB710:GOSUB780:GDSUB710:GDSUB780:GDSUB710:GDSUB710:GDSUB780:GDSUB710:GDSUB710:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB780:GDSUB770:GDSUB770:GDSUB770:GDSUB770:GDSUB770:GDSUB770:GDSUB770:GDSUB770:GDSUB770:GDSUB770:GDSUB770:GDSUB770:GDSUB770:GDSUB770:GDSUB770:GDSUB770:
700
290 IFBs="$"THENP1=1:GOT0900
300 GOSUB775: GOTO670
310 G0SUB710: G0SUB740: G0T0670' 'A
320 GOSUB740: SOSUB730: GOTDA70 ** ** B
330 G0SUB740: G0SUB710: G0SUB740: G0SUB710: G0T0A70**C
340 GOSUB740: GOSUB720: GOTO670 "D
350 G0SUB710:G0T0670''E
360 GOSUB720: GOSUB740: GOSUB710: GOTO670' "F
370 GDSUB750: GDSJB710: GDTD670''S
380 GDSUB710:GDSUB730:GDTD670''H
390 GOSUB720: GOTO670' 1
400 GOSUB710: GOSUB760: GDT0670' 'J
410 GDSUB740:GDSUB710:GDSUB740:GDTD670''K
420 GOSUB710: GOSUB740: GOSUB720: GOTD670 "L
430 GOSUB750: GOTO670' 'M
440 GDSUB740: GDSUB710: GDT0670' 'N
450 GDSUP760; GDTD670''B
460 GOSUB710: GOSUB750: GOSUB710: GOTD670' 'P
470 GDSUB750: GOSUB710: GDSUB740: GDT0670* 7 G
480 GOSUB710: GOSUB740: GOSUB710: GOTO670" R
490 GOSUB730:GOTO670''S
500 GOSUB740: GOT0670" T
510 GOSUB720:GOSUB740:GOTO670''U
520 G0SUB730: G0SUB740: G0T0670* *V
530 GOSUB710:GOSUB750:GDT0470' W
540 GDSUB740: GDSUB720: GDSUB740: GDT0670* *X
550 GDSUB740:GDSUB710:GDSUB750:GDTD670' 'Y
560 GDSUB750: GOSUB720: GDTB670" Z
565 GOSUB760:GOSUB750:GOTD670''0
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570 GOSUB710: GOSUB740: GOSUB760: GOTO670" 1
580 GDSUB720:GOSUB760:GOTD670''2
590 GDSUB730:GDSUB750:GDTD670"3
A00: G0SUB730: G0SUB710: G0SUB740: G0T0A70* * 4
610 GDSUB730:GDSUB720:GDTD670**5
620 GDSUB740: GDSUB730: GDSUB710: GDT0670' '6
630 GDSUB750; GDSUB730; GDTD670**7
640 G0SUB760:G0SUB720:GDTD670"8
650 GOSUB760: GOSUB740: GOSUB710: GOTD670" 9
670 GOSUB775:PRINTB$:
680 IF P1=1 THEN GDT0 900
490 IF C1=1 THEN GOTO1000
695 IF R1=1 THEN GOT01050
700 GBTD110
710 OLT255, 04: BOSUB770: DUT255, 0: BOSUB770: RETURN? OLT
720 0u1255.04:GDSUB770:DU1255.0:GDSUB770:DU1255.04:GDSUB770:DU1255.0:GDSUB770:RE
TURNI''2 DITS
730 GLT255, 04: GDSUB770: DLT255, 0: GDSUB770: DLT255, 04: GDSUB770: DLT255, 0: GDSUB770: DLT
T255,04:G05UB770:0UT255,0:G0SUB770:RETURN' 3DITS
740 0UT255-04: GOSUB780: OUT255-0: GOSUB770: RETURN' DAH
750 OLT 255: 04: GOSUB 780: DUT 255: 0: GOSUB 770: DUT 255: 04: GOSUB 780: DUT 255: 0: GOSUB 770: RE
TURNI''? DAHS
760 GLT255, 04: GOSUB780: GUT255, 0: GOSUB770: GUT255, 04: GOSUB780: GUT255, 0: GDSUB770: GL
T255.04:G0SUB780:OUT255.0:G0SUB770:RETURN''3 DAHS
770 FORA1=1TDX1:NEXT:RETURN''DIT LENGTH
775 FDRA1=(TDX1+2:NEXT:RETURN SYMBOL AND WORD SPACE
780 FORA1=1TOX1*3:NEXT:RETURN''DAH LENGTH
800 DUT255.04:FDRA1=1703000:NEXT:DUT255.0:RETURN**KEY DOWN 6 SECS
900 T=J+1
910 C$="A MESSAGE OF 255 CHARACTERS MAY BE INSERTED HERE."
920 IFJOLEN(C$) THEN 950
930 Bs=MIDs(Cs, J, 1)
940 GOT0136
950 Kmx+1
960 Ds= ' AND ANOTHER ONE HERE."
970 IF FILEN (D$) THEN 110
9F0 Bs=MIDs(Ds,K,1)
990 BOTO 130
1000 J1=J1+1
1010 J18= 'CQ CQ CQ DE VK3ASL VK3ASL VK3ASL * K"
1020 IF J1>LEN(J1$) THEN 110
.036 Bs=MID$(J15.J1.1)
1040 BDT0130
1050 J1=J1+1
1060 _1$="Vk3A5_"
1070 IFJ1>LEN(L1$) THEN 110
1080 B$=MID$(L1$,J1,1)
1090 GDTG130
1120 PRINTCHR$(10) "**RECEIVING**"
1130 Z=1744/4B*1/B1
1150 A$= INKEY$: IFA$="$" GOT020
1160 IF As="#"THEN PRINTCHR$ (10) "**SENDING**": GBTG110
1170 V=V+1:IF U=1 AND V>=7*5 THENPRINTCHR$(32)::H=0
1180 IF INP(255)=127 THEN1150 FLSE1210
1190 V=0:X=0:Y=Y+1::IFY>Z*3 THEN1260
1200 IFINF(255)=127 BBTD1190
1220 IF INP(255)=255G0T01210
1230 IF X>=ZAND X<Z*3 THENT$="."
1240 IF X>=2*3 THENT$="-"
1250 W$=W$+T$:GBTB1190
1260 IF W#=".-"THENPRINT"A"::GOTD1630
1270 IF Ws="-..."THENPRINT"B";:60T01630
1280 IF W$="-.-."THENPRINT"C"::60T01630
```

```
1290 IF Ws="-.."THENPRINT"D";:60T01630
1300 TE WAR", "THENPRINT"E": 150T01630
1310 IF W$="..-."THENPRINT"F";:GDTD1630
1320 JF W$="--. "THENPRINT"G"::GOTD1630
1330 IF Ws="...."THENPRINT"H";:60T01630
1340 IF W$=".."THENPRINT"I";:50T01630
1350 IF W$=".---"THENPRINT"J"::GDTD1630
1360 IF W$="-.-"THENPRINT"K"::GOTD1630
1370 IF W$=".-.. 'THENPRINT"L"::GDT01630
1380 IF W$="--"THENPRINT"M":: 60TD1630
1390 IF WS="-. "THENPRINT"N":: GDTD1630
1400 IF Ws="---"THENPRINT"O"::GDTD1630
1410 IF W$=".--."THENPRINT"P";:60T01630
1420 IF Ws="--, -"THENPRINT"Q"::60T01630
1430 IF W$=".-."THENPRINT"R"::GDTD1630
1440 IF W$="..."THENPRINT"S"::50T01630
1450 IF W#="-"THENPRINT"T":: GOTD1630
1460 IF W$="..-"THENFRINT"U"::60TD1630
1470 IF WS="...-"THENPRINT"V"::GOT01630
1480 IF W$=".--"THENPRINT"W"::60T01630
1490 IF Ws="-..-"THENPRINT"X"::GOT01630
1500 IF W$="-. -- "THENPRINT"Y": : GBT01630
1510 IF W$="--.."THENPRINT"Z";:GOTO1630
1520 IF Ws=".---"THENPRINT"1":: GOTO1630
1530 IF Ws=".,---"THENPRINT"2";:G0T01630
1540 IF Ws="...-"THENPRINT"3":: GOTO1630
1550 IF W#="...-"THENPRINT"4";:G0T01630
1560 IF Ws="...."THENPRINT"5"::GDTD1630
1570 IF Ws="-..."THENPRINT"6"::60T01630
1580 IF Ws="--..."THENPRINT"7"::GDTD1630
1590 IF W$="---."THENPRINT"8"::GDT01630
1600 IF Ws="----, "THENPRINT"9":: GOTD1630
1610 IF W#="----"THENPRINT"0";:GOTD1630
1620 IF W$"....."THENPRINT"ERROR"::G0T01630
1630 W$="":L=1
1640 Y=0: GBTD: 150
```



Ted Holmes VK3DEH

20 Edmond Street, Parxdale, Vic 3195

Bill Bi theringtwit was thoroughly fed up with the whole mobile situation. It had been nothing but disaster from beginning to end. resulting in a mutilated car and a wrecked antenna, not to mention a microphone trampled beyond redemption. He decided he had had enough of being banned from the house by a determined better half and that it was time he resumed activities inside Afetr all, it had been weeks since the affair of the ruined antenna and a new one had been erected by then by a trades-

0670

A tradesman! Merciful heavens! Couldn't B II have done that sort of thing himself? Amateur Radio was about doing things vourself and his wife hadn't let him. Instead she had insisted on having the job dona properly (as she put it) Bill still smarted about this There the thing stood, shiny and new, right on top of the chimney and Bill str i harboured a smouldering resent-

Then the smoke started. Thick, oily and revolting. It camethrough the holes in the top of the power supply box and got steadily thicker.

1700 GDSUB780: GDSUB710: GDSUB780: GDSUB710: GDSUB780: GDSUB710: GDSUB780: GDSUB710: GDSUB780: GDSUB710: GDSUB780: G

This caused Bill some alarm. The device had never done this before, even though he could recall bearing unusual poos and squeaks from it last time he had used it He wasn't sure what to do. It didn't occur to him to switch off the power supply at the socket. Instead he suddenly remembered he had a glass of beer with him. Instantly he tossed the contents of the glass over the supply, so it would fall through the holes and put the fire out

There was a loud bang as the house fuses blew and Bill's wife, happily watching TV with her brand new antenna, was dramatically plunged into darkness.

a better job himself for half the price! He wandered into his long neglected shack and stared at his gear. It was covered with a fine film of dust and quite a few cobwebs. This wasn't because of his enforced absence: it always looked ! ke that Bill felt something stirring within him. a strange longing tinged with frustration and a certain amount of trepidation. There was his ancient Star, the Rolls Royce of rigs, neglected, lonely and calling for him

Sudden y he sat at the table Dare he? Why not? After all, Ameteur Radio was about doing your thing and why shou dn't he do his? Damn it! A man can stand rust so much! He turned on the power supply It was silent and did not emit the loud hum he was used to Strangel The plug was in and switched on He gave the cord a yank and at this stage the sme began, It was a smell tike an old incinerator, mixed with burning rubber, together with dust He wiggled the power cord about a bit and heard odd crackling sounds.

ARREVIATIONS IN COMMON USE

Magazine articles and books dealing with almost any aspect of modern electronics will be found to contain guite a few acronyms and other abbreviations for frequently-used terms. Once the abbreviations are known, communication often becomes easier and more efficient than if they were not used; but until the abbreviations are known, it can be very difficult. A Below you will find most of the abbreviations in common use, with their meanines briefly explained. Used as a reference, this should allow you to follow most articles and books. Specialised or less frequently used abbreviations should usually be defined in the articles in which they appear, either in the text at the first appearance, or in a separate glossary. For

more complete explanations of meanings than are given here, refer to standard texts. PA. ps --- Power amp ifier A - Ampere (Amp) PCB - Printed circuit board AC. ac - Alternating current GDO, ado - Grid dio ascillator pep - Peak envelope power GHz - Gigahertz (1000 MHz) AF, at - Audio frequency pF — Picofarad age - Automatic gain control h - Hour (24 hour clock), hecto Ph - Hamad - telephone No (STD code AH - Hamads - at home or private num-- Henry first) ber. After hours HF. M — High (requency (3-30 MHz)) Phone - (Ione) Telephony-segment, voice ALC, alc - Automatic level control HI, hi - Greetings transmission AM, am - Amplitude modulation HT. ht -- High tension (V) (also hV, HV) ply - Peak inverse voltage AMSAT - The Radio Amateur Satellite Hx - Hertz (cycles per second) PM, pm - Pulse modulation, phase modu-

Corporat on IARLI - International Amateur Radio Union ani - Automatic noise limiter IC. ic - Integrated circuit ppi - Plan position indicator (radar) AOCP - Amateur Operator's Certificate of

IF. If - Intermediate frequency PSU - Power supply un t Proficiency ITU - International Telecommunications Reactance-resistance ratio, transistor AR, er (s) - Amateur radio (service), noin11 Q code - CW abbreviations - see Hand-Amateur Radio magazina

k - Kilo (1000) - e.a. kilo-ohm (1000 book for amateur operators ASCII - American Standard Code for In-OTHR - Hamad - address correct in curohms) formation Interchange rent W.A. call book ka - Kilogram ATV - Amateur television RF, rf - Radio frequency kHz - Kilohertz (1000 Hz) avc - Automatic volume control RFC, rfc - Radio frequency choke km -- Kilometre

belun - Balanced to unbalanced transkW - Kilovoli rfi - Radio frequency interference former RI --- Radio Inspector kW - Kilowatt bc - Broadcast RMS, rms - Root-mean-square LACCP - Limited Amateur Operator's BCD, bcd - B nary coded decimal **RST** — Readability, strength, tone (report-Certificate of Proficiency

ing signals) (RS only for talebol - Broadcast interference LC - Inductance capacitance (ratio) BFO, bio - Beat frequency oscillator phony) LED - Light emilling diode bit - Binary digit LF -- Low frequency (30-300 kHz) RT - Radio Telephony Bus - Hamads - business or working RTTY - Radio teletype (teleprinter) LT - Low tension (V)

hours, office hours By - Hamads - receiver m - Metre CB - Citizens band SAE - Also sase Sell Addressed Stamped m - Milli (one thousandth, 0 001) CCIR - ITU - Comite Consultatif Inter-Envelope M - Mega (1,000,000, e.g. 1 MHz national des Badio communica-- Super High Frequencies (3-30

GHz) (microwave regions) Ch - Channel u - Micro (0 000001) (one millionth) S/N, s/n - Signal to no se (ratio) uA - 0 000001A (also uF, uH, uV) cm - Centimetre SS - Solid State

mA - Milliampere (0 001A) (also mM, mV, coax - Coaxial cable SSB - Single Sideband (suppressed carmM1 CRO - Cathode Ray Oscilloscope rier) - A3J mode CW, cw - Continuous wave, carrier wave MCW - Modulated CW (A2 mode) SSTV - Slow Scan Television

(Morse) meg - Usually megohm Std - Standard MF - Medium frequencies (300-3000 kHz) SWL - Short Wave L stener dB - Decibe (medium waves) SWR - Sland ng Wave Ratio DC. dc - Direct current

MHz - Megahertz (1000 kHz) Text — Hamads — transceiver DX, Dx - Distance (relative) mic - Hamads - microphone (also mike) TPI - Turns per inch EHF, ehf - Extra High Frequency (30micromicro - Same as pico, obsolete term tota - Tuned plate luned grid 300 GHz) TV. tv - Television mm - Millimetre EHT, eht - Extra High Tension (V)

TVI, twi - Television interference mox — Manual operated transmissions EMC — Electromagnetic Compatibility Tx - Hamads - transmitter MUF - Maximum usable frequency EME - Earth-moon earth (moonbounce) UHF - Ultra high frequencies (300-3000 emi - Electromotive force (V) NL - Noise limiter

MHz) ns - Nanosecond (0.000000001) (one V - Vott thousand millionth of a second) VFO. vio - Variable frequency oscii ator

FCC — Federal Communications Commis-OSC - Oscillator VHF - Very high frequencies (30-300 MHz) OSCAR - Orbiting Satellite Carrying VLF - Very low frequencies (3-30 kHz) Amateur Radio vox - Voice operated transmission om - Old man VOX - Voice operated transmission

VU - Volume unit Power (p page, pp pages) - Pico (0.000000000001) (one million VXO - Variable crystal osci.lator W - Watt millionth)

FM, fm - Frequency modulation ("NB" -FSK -- Frequency shift keying (F1 mode)

ERP, orp - Effective radiated power

sion (USA)

FET - Field effect transistor

narrow band)

tsd - Full scale deflection

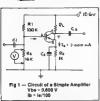
F -- Farad

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A TRICKY CALCULATION?

Last year this magazine held a competition which involved a one transistor amplifier. Although the usual rule of no correspondence being entered into appllies, I think it might be interesting to look at the problem, which was as follows:



A one transistor amplifier is shown in Fig 1. The question was what readings would be obtained on

(i) A volt meter with a 20 k ohm per volt sensitivity set on the 10 V range (ii) A volt meter with a 10 M ohm input

resistance Firstly let us check the voltage across R2

without the volt meter V.

The current through Re is 1 mA thus the

voltage across Re, V = IR = 1 mA x 1 k ohm = 1 volt

Now Vbe = 0 600 V
Thus the voltage at the base is 1 600 V
positive with respect to ground. This is the

same voltage as is across R2.
The current through R2 is
I = V/R

= 1 600/16 000 amp = 0.1 mA The base current of the transistor is

1 mA/100 or 0 01 mA.
As both these currents come through R1

the current through R1 = 0.1 + 0.01 = 0.11 The voltage across R1 = IR

- 0.11 mA x 100 k ohm = 11 000 V The voltage across R1 and R2 is thus 11.000 + 1 600 volts or 12 6 volts as shown.

(Just as well!)
If we put a volt meler across R2 it will
draw some current For the first part of the
question, the volt meter has a resistance of
20 k C x 10 V - 200 k ohm. This in parallel
with R2 becomes less than 16 k ohms, to
becomes Rp. The result of two resistors Ra,
Rb. in parallel Rp. = R8 PG/Ra = Rb) or 200 x

16/(200 + 18) k ohms. This works out as 14,814.814 ohms.

Obviously the voltage at the base of the transistor is reduced and consequently as Vbc = 0.600 volts the voltage across Re must reduce hence le reduces. Now when le reduces so does lb as lb = Fe/100.

But Ib flows through R1 and helps determine the voltage at the base which determines Ib which . . . See the problem? For those who don't like algebra this is a good point to stop reading.

Fig 2 -(a) Blas Circuit
(b)
Fig 3 -(a) Blas Circuit
Y
Y
1 2 7 2 7 3 7 3 7 3 0 chas

To solve the problem we need to redraw the circuit and to go on step by step. Consider Fig 2(a) which shows the bias resistors 81 and 82. As drawn the open circuit vo tage at X is 16 x 12.6/(16 + 100) = 1.737 931 volts If we were to short X to ground the short circuit current would be 12 6/100 k

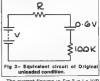
= 0.126 mA.

The bias circuit is equivalent to any circuit that has the same characteristics as itself. Fig 2(b) shows such an equivalent with V = 1.737 931 and R = V/0.126 mA =

itsett. Fig 2(b) shows such an equivalent with V = 1.737 931 and R = V/0 126 mA = 13,793.10 ahms. measurements between X and ground would not reveal any difference between it

would not reveal any difference bet and that of 3(a).

Incidently we have just used Thevenins. Theorem to get the equivalent Circuit. Note that we have simplified the circuit so our that we have simplified the circuit so our in the original circuit so the three simplified in the original circuit so the transistor was connected. The transistor may be represented as a 0 V volt drop, drawn as a resistor cause to the emitter resistance A. I. A office with the circuit so the control of the circuit so the control of the circuit so the circui

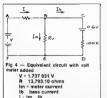


The current flowing in Fig 3 is I = V/R = (1.737 931 - 0 600)/(100 + 13.793 1) mA 0.01 mA

0.01 mA
This is the base current of the transistor
T which is the same as we calculated

before So our equivalent circuits are working! Fig 4 shows the effect of the volt meter Note that so far, apart from Theyenin's

Theorem which is really only a little logic, we have just been using Ohm's Law and a little knowledge of transistors. The next bit requires some afgebra.



By = 200 k ohms or 10 M ohms We can proceed several ways but here is one method

Consider the two current pops AB EF and ARCDEE

First v (1) V = /R = ImRv = 0 The volt drops must equal the supply

vo tage or in other words the sum of the Supply voltage and the volt drops in a closed circuit is zero

Next (2) V - IR - 0.6 - Ib 100.000 = 0 Also (3) = h + lm

Using equation (3) we can re-write equations (1) and (2) and putting in the

numeric values we get 1 737 931 - 13,793 10 (,b + lm) - 200,000

1.737 931 -13,793,10 (lb + lm) - 0.6 -100 000 th = 0

These equations can be solved to get (b)

and Im (Find someone studying year 10 or 11 at High School If you work through it you will get Im = 7 5429 uA. The meter reading is of course Im x Rm = 7 5429 µA x 200 k = 1 509 volts

S mi arly for Rm = 10 M ohm Vm is found to be 1,598 volts. Ok so it is not all that easy. but then the prize was well worth a little Actually the calculations are just a little

tedious and not at all tricky. Aithough it is a practical problem you might encounter it is beyond the AOCP syl abus - or at least at the moment the calculations are Of course if you have a small computer

system that you can use then the task of calculating the voltmeter reading can be much easier. Although initially the answers were worked out anohand and the programme shown here was used to check the answers. Also shown here are the results of three runs for metre resistances of 10 ohms, 200,000 ohms and 10,000 ohms.

Those of you with computers may like to use the programme which is written in BASIC Expert programmers may find room for improving the programme

At this stage I too reserve the right to not enter into further correspondence or debate on this topic 73 de 5 PEN STAC/INITMETER LOADING

10 B1-100000 20 82-14000 30 RT#1000

40 HRE-A 4 50 HEE-100 40 UCC=12 6

70 INPUT"METER RESIST.": PM 100 UDCaUCCa02/(01+02)

110 TOC-UCC (D1 120 PEOHIDE /TEC 130 A1sPM+PFO

140 A2=RFD IEA DI-DEG

1A0 B2=HFF#RT+RFD 170 D1-UDE 180 B2=UNC-UNE

190 6051191000 200 THAYNUB / DENON

210 HM-TH-ON 220 PRINT"READING - "-UM-"U "

210 FMB 1000 REM SINIL. EGN SOL.

1010 DF#08=41=R2-42=R1 1020 XNUH=D1=B2-D2=R1 1030 YNIIN=B2#41-B1#42 TOAC PETHON

Fig 5 — Computer Programme

DATE METER RESIST. 7 1054 READING -1.5980A295 U. NETER RESTST 7 200000 DEADING -

1.50857143 V. METER RESIST. 7 10000 READING = 727287471 U

> Fig 6 — Typical Printout Search & Rescue TRS-80



AMATEUR EXERCISE During the week between the 11th and 18th

Sentember the City of Sydney and the Premier's Department of NSW staged a Carnuala Factival Cine of the many venues was a fun run on the 18th organised by the Labour Council of NSW. The run was to start at 9 AM at the Botanical Gardens, go past the Onera House through the Rocks area, across the Harbour Bridge and back to the start. about 10 km in all WICEN were approached to provide emer-

gency communications. Unfortunately owing to a previous commitment, they were not available. A group of nine amateurs then organised themselves to provide a base station and some ten check points along the route Richard, VK2ANB was monitoring from

hame and provided the only telephone link The frequency used was 144 8 MHz FM Fortunately no emergency occurred and

communications were progress reports only The following amateurs participated with areat enthusiasm. Glenys VK2NMH, Bob VK2YPF. Simian VK2AVD Steve VK2KBL Gary and Yi. Carrol VK2ZKT. Peter VK2YDP Martin VK2PJW, Richard VK2ANB, and Kurt

The group received a letter of thanks and congratulations for a competent and profes signal exercise from the secretary of the Labour Council for NSW

Kurt Reichstadter VK2KBG

Did you hear about the send-off party in the completely automated office? The computer out loaded and tried to untasten the electric typewriter's ribbon from "The Lyrebird

Can a TRS-80 have an important role in a search and rescue mission? Definitely, say

search and rescue mission? De niery, say several Utah TRS-80 users as they have demonstrated the use of the machine as members of Utah Civil Air Patrol in the JSA Civil Air Patrol is a nationwide, volunteer organization dedicated to search and rescue

aerospace education and a volith programme Some of the functional programmes include compiling search effect veness reports, isting a day's aircraft search effectiveness and — get this — offer a computer recommendation of best allocation of air search planes for the next day's effort Other programmes keep track of up to 50

planes participating on a search (listing prot information, time faunched time landed and total hours flown), and programmes that convert latitude and longitude to the Air Force standard search grid (based on aircraft sectional maps) or converting the search grid back to latitude and longitude

There are programmes that teach search and rescue technique by way of game format and programmes that keep track of people participating in search missions One of the most useful items of software s

the "Aircraft Data" programme that keeps track of Utah Wing CAP's aircraft This programme shows the status of the aircraft (including member-owned planes), the colour of each plane, and other tems involved in search missions concerning pilot gual fications. plane equipment and configuration

The air data programme runs on TRS-80 Model 1, 32K, with printer and disk, Other programmes will run on Level II, 16K

The search programmes are easily changed to meet local requirements or even those of other groups apart from CAP involved in

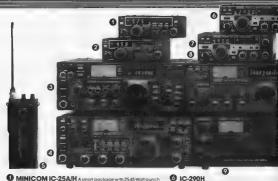
Search and Rescue missions TRS-80 owners or amateur radio operators who would like to obtain the software with the intent of assisting a search group are invited to contact Lt. Col. Jerry Wellman, Utah Wing C vi-

Air Patrol, 840 East 6th Avenue Salt Lake City Utah 84103, USA. AMATEUR RADIO, December 1983 Page 33

VK2KBG

A Transceiver

Spoil yourself this Christmas with a speci



- MINICOM IC-25A/H A small package with 2545 Walt punch IC-25A/H has 5 memories, 2 VFOs, 2 scanner systems and is a full featured 2 meter FM transceiver for life is pace conscious operator.
- MINICOM IC-45A
 Small size 40 Walth unit fleaturing 5 memories, duai VFOs and much more.
 70 cm FM transceiver. The space saver.
- IC-745
 All band, SSB, CW, RTY, HF transceiver with general coverage receiver 16 memory channels. IF shift and PBT as standard are just three of its features.
- 16 memory channels. If shift and PBI as standard are just three of its features

 16 IC-751

 NEW

 Competition Grade all band H transceiver with general coverage receives a memory channels, optional internal power supply with FM as standard.
- IC-4E
 In m hand held for convenient FM repeater operation.

- 6 IC-290H
 State of the art 2 meter 25 Watt a I mode transceive
 - with 5 memories and 2 VFOs. This unit provides base station features in a mobile package.

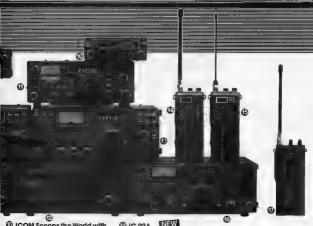
 1 IC-490A
- A 70cm all mode transceiver with base station features like, full capability scanning, 5 memories, 2 VFOs and more. All at this in a mobile package.
- IC-271A NEW
 SEW
 Walts of FM, SSB, CW for 2 meters. Base station with 32 to Hungt on memories for frequency offset offset.
- direct on ACopt on

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 All so id state 500 Waft HF linear: automatic band change when used with ICOM HF system

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@ IC-471A NEW Base transceiver 25 Worts a mode 430-450 MHz With 32 memory capacity, storing frequency, mode offset direction and offset frequency. AC option

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neter hand held FM transceiver with keyboard entry, 10 memory

channels, scanning and many sought after features. er with keyboard entry, 10 memory

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Brazii DX Award	May		Hehvelra Contest Rules	Mar	32	Ted Holmes VK3DEH	van	
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Cape Northumbersand Award	Feb	40	July Contract rights	. Jon	42	VX3DEH	Dec	
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-VK2EBM

completed1!!



THTERNATIONAL MEWS

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To commemorate the amateur radio operation of WSLFL aboard Space Shuttle "COLUMBIA" STS-9, a special philatelic cover (equational is to be issued in continuotion with the Solomon Islands Radio Society The coupy will state "FIRST AMATEUR

RADIO OPERATION FROM EARTH ORBIT" within the Ameleur Satellite Corporation (AMSAT) logo. A 45c Solomon Islands postage stamp

featuring orbiter COLUMBIA will be affixed to the cover and cancelled on the first day of operation





The cover will be available from PO Box 81 Honiera, Solomon Islands at a cost of US\$1,00, 5 IRCs or equivalent for direct mailing by air.

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Peter Taylor, H44PT

JARL HAM FAIR '83

The JARL Ham Fair was successful in that it not only recorded the largest number of visitors, about 38 000, but there was also an IARL Region III booth. In commemoration of WCY, for the first time. The WIA was a participant in this booth



The IARU exhibited several panels, written in Japanese, on the wall of the booth depicting the outline structure of the IARU and its



Visitors showing great interest in the IARU booth These exhibitions contributed to grousing

interest in international amateur radio organ sations and the r importance

MAI TA

The use of hand-held receivers is now permitted provided that they are used indoors as base stations

JAPAN

The Radio Law of Japan has been changed to allow amateur radio operation by allens in Japan Main conditions are that the a ens' government permits Japanese citizens to operate similar stations in their country and that the Japanese Government determines the conditions to ensure equal ty of treatment The first reciprocal agreement to be made under the new law was with the USA

AR

ZL1HV in Breekin Oct 83

STS-9 UPDATE The launch date of STS-9 has supped from



Masayoshi Fujioka, JM1UXU, Secretary

Region HI IARLI

EHF bands for the amateur satellite service.

and go off course. main activities in the past with particular emphases being placed on the results of WARC-79, new HF bands and new UHF and

the end of October to the end of either November or February After recovering the Solid-fuel Rocket Boosters (SRBs) from STS-8, NASA discovered excessive erosion of the ablative material lining one exhaust nozzle and funnel. The ablative materia, protects the metallic portions of the rozz e and funnel from burning through during the burn of the engine (Once an SRB is ignited, it will burn until the fuel is exhausted) Should purnthrough occur during ascent, the Shuttle would probably be thrown into a violent spin

ARRIL NEWSLETTER DATED 13th OCTORER

regional organisations, their purposes and Page 44 - AMATEUR RADIO, December 1983

TABLE OF AMATEUR RADIO FREQUENCY ALLOCATIONS FOR PAPUA NEW GUINEA AS FROM 14TH JULY 1983

Frequency Band (Category)	Type of Service	Remarks and Restrictions
1800-2000 kHz	AMATEUR	- This band has been extended to reflect the docusion of WARC 79 Amalours w
3500-3700 kHz Primary)	AMATEUR	be required to avoid 1870 title - 4 title No change to this baild
7000-7100 kHz (Primary)	AMATELIR AMATELIR	 This band has been reduced at accordance with WARC 79 requirement. Refer to
	AMATEUR-SATELLITE	RES 641
10 100 10 150 kHz (Secondary		 New band, allocate in PNG on 7th December 1981
14 000-14 350 kHz (Primary)	AMATEUR AMATEUR-SATELLITE	- No change
16 066-18 168 kHz	AMATEUR AMAYEUR-SATELLITE	Not allocated at this time due to existing services in neighbouring countries
21 000-21 450 kHz (Primary)	AMAYEUR AMATEUR-SATELLITE	- No change
24 890-24 990 kHz (Primary)	AMATEUR AMATEUR SATELLITE	New Allocation. All Amateurs to avoid the frequency 24 900 kHz * 4 kHz
26 000-29 700 MHz	AMATEUR-SATELLITE	- No change
50-54 MHz (Primary)	AMATEUR	 Change on category of service to the 50-52 MHz band
144-148 MHz	AMATEUR AMATEUR-BATELLITE	— No change
148-148 MHz (Primary)	AMATEUR	— No change
430-440 MHz (Secondary)	AMATEUR*	 Amateur-Satellite permitted 435-436 MHz in accordance with footnote 664 (Note band reduced from 420-450 Mhz)
440-450 MHz (Secondary)	AMATEUR	 This band is allocated in PNG under footnote 666
678-585 MHz ("Primary)	AMATEUR	 No change This band allocated under Regulation 342. Add tions, allocation in PNG on a Primary basis until such time as real-ocated to the Broadcasting Service.
1240-1300 MHz (Secondary)	AMATEUR	 Band reduced from 1215-1300 MHz 'Amateur-Sate its permitted '260- 1270 MHz in accordance with looknote 864
2300-2450 MHz (Secondary)	AMATEUR*	 Amateur-Satellife permitted 2400-2450 MHz in accordance with looknote 854 Refer also footnote 751
3300-3500 MHz (Secondary)	AMATEUR	 No change "Amateur-Satellite permitted 3400-3410 MHz in accordance with socingle 564
5850-5850 MHz (Secondary)	AWATEUR*	 No change "Amateur-Sateline permitted 5650-5870 MHz in accordance with looinole 664
10-10 45 GHz (Secondary)	AMATEUR	— Ne change
10.45-10.5 GHz (Secondary)	AMATEUR AMATEUR-SATELLITÉ	- New allocation for Amateur-Seletite
24-24.05 GHz (Primary)	AMATEUR AMATEUR-SATELLITE	- No change
24 05-24 25 GHz (Secondary)	AMATEUR	— No change.
47-47.2 GHz [Primary]	AMATEUR-SATELLITE	- New Allocation.
75.5-78 GHz (Primary)	AMATEUR AMATEUR-SATELLITE	New Allocation
76-81 GHz (Secondary)	AMATEUR AMATEUR-SATELLITE	- Nee Allocation
142-144 GHz (Primary)	AMATEUR SATELLITE	- Nee Allocation.
144 149 GHz Secondary)	AMATEUR AMATEUR-SATELLITE	— New Allocation
248-250 GHz (Primary)	AMATEUR AMATEUR-SATELLITE	- New Allocation.

SUMMARY OF FOOTNOTES

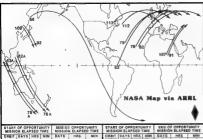
Below is a reproduction of the footnoies referred to in the Table of Amateur Radio Frequency Al ocations for Papua New Guinea

664 in the bands 435 438 MHz, 1260-1270 MHz, 2400-2450 MHz, 3400-3410 MHz (in Regions 2 and 3 only) and 5650-5670 MHz, the amateur-satellite service may operate subject to not causing harmful interference to other services operating in accordance with the Table (see No 435). Administrations authorising such use shall ensure that any harmful interference caused by emissions from a station in the amateur satellite service is immed ately of minated in accordance with the provisions of No 2741. The use of the bands 1260-1270 MHz and 5650-5670 MHz by the amateur-satellite service is limited to the Earth-to-space direction

666 Additional allocation in Canada, New Zealand and Papua New Guinea, the band 440-450 MHz is also a located to the amateur service on a secondary basis

751 In Austra ia, the United States and Papua New Guinea, the use of the band 2310-2390 MHz by the aeronaut cal mobile service for telemetry has priority over other uses by the mobile services. AR

STS-9 AMATEUR RADIO DEMONSTRATION GROUND TRACK LOCATOR WORLD OPPORTUNITIES (EXCLUDES U. S. PASSES)



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NOVICE NOTES

Ron Cook, VK3AFW TECHNICAL EDITOR

Why bother with a ballun in the first place you may ask A ballun is a device which transforms a balanced load or a unbalanced load or, looking at it from another angle, it enables a coasial (unbalanced) feed in the to be connected to a belanced of pole antenna without the sus problems.

WHAT PROBLEMS?

If we refer to F-p 1 we see a transmitter producing an RF signal which is fad into a coaxig cable A current If 19ows in the centre conductor of the cable and an equal current for flows in the opposite direction on the inside of the outer conductor At any Instant the currents rat an the same relative amplitudes but are 180° out of phase.

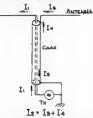


Fig 1, Illustration of the effect of connecting a coaxial feeder to a balanced serial.

Meanwhile at the antenna which we have a reetly connected to the coasial cable, we see that at this instant of time 11 is flowing from the centre conductor out along the antenna If all were well and compatible we would have a corrent 12 flowing from the antenna back made the coast Secales and ofference between the risk dend from the coast and ofference between the risk dend the outside of the coast a spirit ng of the current occurs with some current flowing down the custode of the braid and some down the inside. The division ratio, and hence the relative sizes of

The antenna current, and I4, the outer coax current, is complex. If the coaxial cable is an odd number of quarter-wavelengths long then a high impedance will be seen on the outs de and I4 wir be negligrobe I3 will then be equal to I2 and all white well. If the cable is a multiple of half-wave enoths then a low

BUILD A BETTER BALUN

impedance will be seen and I4 will be much larger than I3. The coaxial cable then becomes a significant part of the antenna.

Because of its proximity to the ground for part of its length for a tower, guttering, etc) it will be lossy. Being largely vertical it will be vertically polarised and so will introduce more noise into the receiving system. Further, if the transceiver is not well grounded for RF, microphones, keys etc can be a source of RF burns due to lots of RF in the shack. The transceiver is connected to a radiating part of the antenna.

Intermediate lengths will produce intermediate effects. A balun can solds the outer braid from the antenna and allow 13 to be the same as IZ Note that although Fig 1 shows IZ See that the same and the same and the same differences. Remember we are dealing with RF, not DC. IS and I4 bould even flow in opposite directions—that is I4 could have that the same promiting down The situation can become literally cluster complex and it is beyond the scropt of the article to go into the beyond the scropt of the article to go into the

It is sufficient to say that the overall effect is to alter the antenna in respect to 1 Radiation pattern — shape is changed.

vertical radiation increases.

2 Received noise level is reised due to pickup on the outer of the feedline.

3 Antenna efficiency drops due to absorption.

of feedline radiation in nearby conductors

4 Antenna system resonance and impedance
are altered giving a different VSWA

Yes you can connect coaxial cable directly to a dipole and get good results but you can do better by using a balun



Fig 2. Illustration of method of winding of conventional transmission line 1:1 balun. Two separate insulated wires can be used instead of the coax if they are twisted logether with say one twist per cm. (See lext.)

A popular balun of conventional design is shown in Fig.2 For a 50 ohm system a 50 ohm cable is wound on a ferrite core to produce an inductance of about 250 ohms reactance the lowest frequency of use. The large (6 mm did alore of a 50 ohms reactance) and the substantial of the first produce and the lowest frequency of use. The large (6 mm dig) red core sold by Dick Smith and others quite suitable for HF. Even a core from a TV EHT transformer works with

Mote that about a quarter of the core a left free of winding. This is because the high freequency limit at sets are the progression of the winding and the shunt capacitance. Capacitance across the end of the winding at this important and is reduced by keeping the ends of the winding is this important and is reduced by keeping the ends of the winding at this important and is reduced by keeping the ends of the winding at the reduced of the winding at the reduced of the winding at the reduced of the winding at the winding and the reduced of the winding at the winding and the winding at t



f₁ — lower frequency limit f₂ — upper frequency limit

Ip — parallel resonant frequency

f — series resonant frequency

Further increases in frequency are accompanied by a fall in reactance magnitude until

eventually series resonance occurs. See Fig. 3. The useful range extends above the para el resonant. Irrequency even though the reachance is capacitive—it is the resotance magnitude that is important as the "thrott es the current trying the flow down the outside of the cosx.

Actually the coaxial cable winding can be

Acquairy the coastal bable winning can be replaced by a two wire fransmission line although for the best results (lowest VSWR over greatest bendwidth etc) the fransmission line should be the same impedance as the feeder (which will be coaxia.) which in turn should be the same as the antenna

Twin feeder of 50 or even 70 ohm is not as readily available as coax. Commercial baluns often use ename ed wire twisted together This can be quite satisfactory I believe that for the home brewer a better alternative is to use a length of figure-8 240 V flexible twin cable. A length of about one metre should be cut off and the two conductors split apart to form two wires. Be careful not to bare the wires except at the ends. Put two ends in a vice and tighten the laws. Pull the two wires out until taunt and fit them into the chuck of a hand dril Turn the hand dr I to twist the wires tightly together. The length of the cable will shorten slightly. When removed from the drill and vice the cable will untwist a little but it should retain at least one twist pericm. If not, repeat the twisting process

In origina, form the figure-8 fiex (called zip cord in the USA) has an impedance of around 146 ohms and is suitable for use up to 21 MHz without much loss. When twisted as above it has an impedance of 60 to 80 ohms and makes a good low loss 3-30 MHz balun

This balun works well with a dipole which is in the clear It is not quite so good when the dinole is unbalanced due to say proximity of trees or bends in the dipole legs.



Fig 4. Schematic diagram of conventional transmission line 1:1 baiun. This shows that it provides isolation but belance is not guaranteed unless the centre of the load is prounded.

Referring to Fig 4 we see a schematic disgram of the balun. If the load is symmetric and grounded in the centre (at is the case with many triband beams) then the balun provides both balance and isolation. If the load is not balanced then solation (reduction or elimination of the outer coaxial cable current) is obtained but not balance, leading to radiation pattern distortion and changes in VSWR. The bandwidth of the balun may be reduced.

Fig 5. An improved 1:1 transmission line balun. An additional winding EF has been added to give balanced output as well as isolation. The load need not be grounded in the centre.

The solution involves adding a third (tertiary) winding to provide a balancing function Refer to Figs 5 and 6. Fig 5 shows that a third wire is wound in Intimate contact with the other two so that it has equal turns and shares the same flux. The start of the winding. F. is connected to the inner conductor at the finish of its winding. B. and the finish of the tertiary winding, E, is connected to C the start of the outer braid

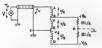


Fig 6. The Improved 1:1 transmission line fiailin redrawn as an auto-transformer. As with the conventional design twisted wires may be used instead of coax. (See text.)

This winding carries very little current as the load current flows through AB and CD. The means by which winding EF provides balance can be seen by referring to Fig 6.

Note that Fig 6 should not be taken too literally as representing a complete equivalent circuit for the balun.

As windings AB and FE appear in series across the end of the cable their total voltage is V. If they have the same turns then each has V/2 across it. Winding CD has the same turns as AB and so has V/2 across it also. The load is across FF and CD and has V/2 + V/2 = V across it. The centre point EC is connected to the coax braid which is nominally at ground. It may be grounded to the tower etc. Thus the load at a particular instant will have +V/2 at one end and -V/2 at the other (with respect to ground) whether or not point X is grounded. If no current flows on the outside of the

coax it has ground potential all along its lengths. (No current = no volt drop.) Removal of winding FE could allow points X

to take up a different potential and current would then flow outside the coax A tertlary winding may be made using half

of a length of flex or a length of enamelled wire of say 22 SWG. If you have a commercial beinn and want to check whether it has a tertiary winding a simple check can be made with an ohm meter

Remove the balun from circuit and measure the resistance betwen the two input leads. If it is low there is (probably) a tertiary winding. If It is open circuit there is no tertiary winding. In some baluns the winding is made along a

rod of ferrite. This does not after the operation although more turns will be required for a given inductance There are many other forms of balun other

than the simple 1:1 device described here The next most common type gives a 4:1 impedance ratio but many other ratios are possible as can be seen by reading the references.

SPECIAL NOTE FOR READERS 1. I welcome contributions to this section

especially construction articles suitable for beginners, novices and SWLs

2. If there is something in one of these columns that puzzles you or you want to take issue over a point please re-read the article before putting pen to paper. Then if you still have a need to write please include an SAE. I certainly don't want to discourage reader's letters as they are a most important feedback - I always reply personally - but observance of the above two points will reduce my stationery bill.

Ron VX3AFW

- ARRL Radio Amateurs Handbook 1982 Ed, Chapters 3, 19, 2 Nagle, J J, K4KJ, "Testing Baluns", Ham Radio,
- Aug 1983, Vol 16, No 8 3 Resert, J. WZJR, "Simple and Efficient Broadband Balun*, Ham Radio, Sept 1978, Vol 11, No 9.
- 4 Nagle, J.J., K4KJ, "High Performance Broadband Balun", Ham Radio, Feb 1980
- 5 ARRL Electronics Onto Book, 1976 Ed. Chapter 5. 6 "Novice Notes", Amateur Radio, March 1983, Vol. 51. No 3.



RIELAMELY

Roy Hartkopf, VK3AOH 34 Toolangi Road, Alphington, Vic 3078

(G) General. (C) Constructional (P) Practical without detailed constructional information. (T) Theoretical. (N) Of particular interest to the Novice.

WORLDRADIO SEPTEMBER 1988 Ameri can magazine-newspaper with news and information. A new "amateur handbook" which should be avoided (G)

BREAK IN. SEPTEMBER 1983, Synthesised Speech readout of frequency, (P)

WHAT'S NEW IN ELECTRONICS, SEP-TEMBER 1983. General Information on new products, components, equipment etc. (G)

73 MAGAZINE, OCTOBER 1983, Fourteen new construction projects, (G), Experiments on 1700 metres (G)

HAM RADIO, AUGUST 1983, Packet radio (T), Testing Baluns. (P).

QST, AUGUST 1983, RF Power messurements, (N) Design of Pi networks, (T)

CQ - TV No 123, AUGUST 1983, PAL Coder. (P) NBTV. (G), 70 cm Linear (C).

EXECUTIVE REQUIREMENT

The Federal Executive requires a VIDEO RECORDER in the BETA FORMAT, in excellent working order, for the Federal Video Coordinator's use.

Any member that may be able to help should contact: THE SECRETARY.

FEDERAL OFFICE. PO BOX 300. **CAULFIELD SOUTH, 3162.** or PHONE: (03) 528 5962.

> Remember to soy you saw their ad in AR

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AMATEUR RADIO AND ELECTRONICS STUDY GUIDE

by Ion Ridgoth, ZL1BCG, ISBN 0-473-00149-7

This excellent book is unusual in that it is entirely handwritten and not typeset. As with the work of the old scribes the text is clearly printed in a neat and Individual hand It is the author's contention that students

learn faster when they have a study guide which presents the theory in a concise and uncluttered way The text is comprehensive in Its coverage and is accompanied by several technical and explanatory drawings on each page. In spite of the author's intention, the format does on occasions get a little cramped. Sufficient material is included to cover the

requirements of the Grade III amateur radio examination conducted by the New Zealand Post Office. In doing so it exceeds the requirements of all grades of Australian amateur licences and fills the gap between simple beginners tracts. Novice study guides and the professional engineering texts. Tooles covered include:

Besistors

Meanetism Transformers Reactances in series and parallel

Resonance Semiconductors Power supplies Amplifiers

Oscillators Value Radio transmitters Radio receivers

DC, AC, Frequency Capacitors, Vectors Inductors

Radio waves and propogation Agrials

Transmission lines Test instruments and measurements

Problems, with answers and useful formulae

Some 10 percent of the book goes beyond the requirements of the AOCP theory even so the book would be a valuable aid to anyone studying for either the NAOCP or AOCP theory exams. Topics recently appearing in NZPO exams are marked with a flag.

The diagrams are well chosen, each one being worth nearly 1000 words, and help to make the theory more readily absorbed. Overall this book compares most favourably with locally produced texts in the same category. Teachers of courses in amateur radio should seriously consider this book as a standard text

The review copy was kindly provided by the author Copies may be available shortly through Magpubs.

BEGINNER'S GUIDETO AMATEUR RADIO by F G Rayer, G3OGR, Newnes Technical Books, ISBN 0-406-01126-2

To the outsider, amateur radio may seem to be a form of CB or, on closer acquaintance, a highly technical and mysterious hobby. Any person with a curiousity about amateur radio and "serious" short wave listening would find this book invaluable.

Young budding engineers, scientists and technicians now at secondary school could find an introduction to the prince of hobbies (amateur radio) through reading this book.

Frank Rayer writes with an easy style and covers every significant aspect of amateur radio and short wave listening. A generous number of drawings, circuits and graphs are used to lucidiv explain each important aspect. Although this book is written about the hobby as practiced in the UK it will be of value worldwide. The theory of radio communication is painlessly explained to the layman, Indeed, at the end, a casual CB operator would be well on the way to successfully sitting for a Novice licence. The reader would become as well informed about all aspects of amateur radio as most experienced amateurs - at least in the general sense if not in technical details of some complexity

Those aspects of amateur radio that often baffle the uninitiated are clearly explained. Frank Rayer was well known, through Europa especially, for his technical writings. Sadly he died shortly after completing the manuscript for this book

It may be that had Frank been able to proofread the manuscript the minor criticism I have would have been unnecessary. That is that some terms are introduced and used without explanation, for example Hz, S/N, VK, VK7 There may be others that I did not find, but as hundreds of other similar terms are covered it is not a bad score If you want to know "all about amateur

radio without really trying" (or becoming one) then this is the book for you. Who knows, after reading the book you might find yourself smitten with the bug If you want to avoid that fate then don't read this book.

The review copy was kindly provided by Butterworths, NSW Copies can be obtained from most good book stores at a recommended price of around \$12.

Page 50 - AMATEUR RADIO, December 1983

REMINISCING AND REALITY

Leo Weller, VK3YX 46 Peperell Avenue, Syndal, Vic 3150

REMINISCING AND REALITY

To divert my inquiring mind after I, at a young age had already wrecked the kitchen clock, the lin opener and the gramophone, my father introduced me to Meccano.

This provided me with many hours of great enjoyment at my "Meccano table" in the corner of my bedroom and an easy choice of

presents for my parents, uncles and aunts With another birthday coming up soon, I asked my father during

dinner if I could have a 20 cm horizontal-thrust ball bearing with gear teeth from the special parts department of Meccano instead of the usual Meccano box 1A My mother, instantly realising that my father had no idea what I was talking about suggested that I accompany

him to the shop giving me the opportunity to select that item myself With this, a tradition was born which lasted many, many years. The only change being from the Meccano to the radio shop, which my father accepted without a blink of an eye - probably realising that I

was growing up

After the radio shop we would go to a coffee lounge and, while sipping coffee my father would listen to me, trying to enter my world of electronics so far removed from his extremely busy business life. The tradition was accepted and continued by the YL and later the

Panic station was on when the oldest girl, then three years old, found a hidden 18 AVO entenns under our hed two days before Chr stmas. This meant that a substitute present had to be placed Loder the Christmes tree

We had no answer to the question "how would Father Christmas know that Dad likes a silly egg slicer?" This being a precious Barker Contemplating on all this we are slowly tuning up and down the

and Williamson solitatetor

only amateur station in China!

seemingly closed 15 metre band, an endless desert of white noise. My good XYL carried the tradition over to our three daughters. However, when I arrive home with the parcel it is instantly confiscated from me with a friendly smile. The next time I see it, it is

gift-wrapped and laving underneath the Christmas free. Nevertheless, for the piris, presents have a rating. A book is on top. Tools, cable, coax is alright, but who wants to give a crystal, one can

hardly see it Dreaming of the future I hope our sons-in-law and grandsons again have this privilege and advantage of a then very old family

tradition Hey! The band is opening up, there is a signal, very weak - dah dit dah dit dah dan dit dah. Still weak but readable BY1PK. That is the



Reality

REGULATIONS AND STANDARDS FOR THE NEW RADIO-COMMUNICATIONS ACT

Very shortly the Radiocommunications Bill will become an Act It is essential that we now turn our attention to the associated Regulations and Standards

The Bill/Act is mainly a legal document and dealing with it was mainly a legal operation. The Regulations and Standards will be far more technical and rather less legal therefore, far more members of the Amateur Radio Movement will be in a position to contribute with comments, suggestions and material towards ensuring that, wherever possible, the regulations and standards associated with the new Radiocommunications Act are as favourable as possible to the Amateur Radio Service. Of course we cannot expect to win on every aspect, however, with a concentrated and co-ordinated effort, and the pooling of all available resources by ALL Australian amateurs should ensure that we have the best chance to make a "fair dent" in this most complex area of the new Act

Yes, the Regulations and Standards will, almost certainly, be highly technical and highly "politically" charged. It will therefore be most advantageous for us, the Amateur Radio Movement, to ensure that we keep our own house in order, ensuring the minimum of internal politics. This is one area where we need to break down any barriers which may exist between various factions within our movement, and present a united front. Let's make sure that ALL the resources available to the Amateur Radio Movement are concentrated behind one central co-ordinated effort. This is one area where, "United we stand - divided we fail".

The Wireless Institute's CASPAR (Communications Act Special Planning And Response) Committee has been instructed by the Federal Executive to provide an independent response to all regulations and standards pertaining to the new Act. The committee has been instructed to co-ordinate and correlate material and information from ALL Australian amateurs and to consider all available information, including overseas information, in relation to the various regulations and standards as and when they are presented by the Department of Communications. The CASPAR Committee recognises the material which was submitted during the review of the Radiocommunications Bill but was held over due to its relevance to regulations and standards

The CASPAR Committee will require the assistance of ALL Australian amateurs with, what could be, one of the most complex and difficult issues to which the Amateur Radio Movement has ever had to address itself

All correspondence in connection with any aspect of the Radiocommunications Bill/Act should be directed to: The CASPAR Co-ordinator, Tony Tregale, VK3QQ, PO Box 300, Caulfield South, Vic 3162

NOTICE

ALL copy for inclusion in February 1984 Amateur Radio must arrive at Box 300, Caulfield South, 3162 no later than 3rd January.





HOW'S I

Ken McLachlan, VK3AH P0 Box 39 Mooroelbark, Vic 3138

Stephen VK2PS, a Federal Councillor and constant contributor to this column has made a number of pertinent comments with

a number of pertinent comments winreference to my remarks in September AR Stephen comments that "VK amateurs are not very good QSLers in general and few make the exeption but this phenomenon is not a new development. When I was first licenced in Europe in the late 1930s, it was

we' known to the fraternity, that to receive a VKQSL card was a pure miracle and that has not changed over the years."

Stephen, quotes the example that he entered the 1982 ALARA contest, had sixteed WK QSOs and QSLed the lot. After twelve months waiting, he is the proud owner of tive return cards. Just over a thirty percent return, but really good for a failing WK operator! One

Not really good for a fellow VK operator! One wonders how an overseas operator would fare.

Another valid remark that is made concerns the VK2 Divisions incoming QSL card cabinet which is bulgling to the seams. Stephen writes

I wonder why the recipients are not picking them up? If they do not OSL, why not tell the other party during the QSL, why not tell the other party during the QSL that they do not and no card should be sent. If they feel that it is imposite to tell the unfortunate amateur on the other end, that he, the VK amateur, does not QSL, it is definitely rude not to reply to a card, even if it is not wanted?

Further to the above. Stephen remarks "that for many a contact to VK by overseas countries, it is a very valued contact, in many cases their first and that card dou'd be needed for DXCC and other awards. But alse "VK do not QSL and the few who do, your cards are certainly valued overseas."

Not to be overlooked of course is the SWLer, and as Stephen points out, quite a few VK amateurs are unaware, that it is obligatory in certain countries before receiving a transntting licence, that they provide proof that they are adopt in the methods of reception and have a general interest in the hobby Stephen urges all amateurs to reply to all SWL cards if they are legitimate.

Other noise extracted from Stephen's lettler noticular the want of DXng in this country, which was evident by the multitudes deserved the country of the multitudes deserved the country of the country o

Another of the comments made in the lengthy letter by Stephen is that "Ragchewing" is fine, nice and essential, but nothing beats the joy, the elevating feeling of good luck and reward for patient! isteming and searching, when one has a successfut QSO with the one only amateur in a certain overseas country. An example of this is a QSO with D44BC the only active amateur in that country.

Thankyou Stephen for taking the time to sit down and commit a few of your thoughts to paper. Have we any other takers with any ideas?

A FIRST

A number of firsts were claimed by Graham VK6RO for CW and SSB on the 18 and 24 MHz bands (refer AR August 1983, p25).

No other amateur has forwarded any documentry evidence that they beat Graham to the honour of being the first, so Graham it appears that it is all yours. Congratulations on your efforts and the use of the new bands so promptly.

HUNTING LIONS

A contest, which is sponsored by Lions international annually, to promote indernational relations and further friendship between individuals of different nationalities. The trophy has been won again for the second consecutive year for the SSB section by Lindsay WKNO. The CW section was won by well known DXeT tim BV2A. Congratulations to both operators.

The 1984 contest will be held on the 14th January and further details may be had from Alan Heath, PO Box 1904, GPO Adelaide, SA 5001

CHINA ON SSB

It was pleasant to hear Tom VE7BC, working from BY1PK and trying to satisfy all comers under very arduous conditions.

All countries including VK and ZL were given excellent opportunities to work this much wanted country and the operators took advantage of airing their lungs in the split operation.

Some operators were very critical of the amount of spectrum used for the sphit operation, but on this occasion it was justified in my book. This amatter was operating under severe difficulties, appearently there was unity CRM level to start with, the GRM was unbecarable as propagation was open to many continents at the same lines and it among the continent of the continent SB kHz. It is a one off occasion really when one times of it.

Severe drift was only one of the problems that Tom had to contend with, which was probably caused by fluctuating line voltages. The linear was playing up and arcing to some extent and not once did I hear this gentleman lose his "cool".

Congratulations Tom on a job well done and your assistance to the amaleurs of Chulo over a considerable period has culminated in you giving many amateurs, worldwide, a new country on SSB towards the end of WCY 1983. The self appointed policemen that manned the BY1PK transmit frequency probably meant well in advising everyone of the listening frequency probably to ne ZL overdid it a bit in my book. If you were fuckly enough to be caffed you would never have hearty our call because of the ORM but Tom is I said before, was very patient.

NEW PREFIX ALLOCATIONS

The New Zealand Post Office has announced new prefixes which will become effective as from the 1/1/84

This rearrangement leaves ZL1-4 as 1 was ZL5 Anlarchic Bases ZL6 Intruder Watch and Emergency stations, ZL7 Chatham Islands (formerly ZL/K), ZL9 Auditand and Campbell Islands (formerly ZL/h) and v-sitors will receive a ZL0 prelix Tokelay presentity ZM7 will change to ZK3,

It is not clear whether existing amateurs in these areas will still retain the calls they are using this year until they finish their tour of duty or revert to the new system immediately

BANGLADESH Apparently the Loensing authorities have

had a change of heart and have at last decided to allow smatteur activity

This is indeed a breakthrough that another

country has officially joined the amateur ranks again and it is a tribute to the amateurs in this country that have been working behind the scenes to bring this event about.

GLOBETROTTING AGAIN tris and Lloyd Colven, W8QL and W6KG, are

on the move again. This time it is down South America way with envisaged stops in Columbia, Ecuador, Peru, Bollvia, Chile. Argentina, Uruquay and Paraguay.

They both hope to be active on all bands,

SSB and CW, and will be paying particular attention to the lower bands including thirty metres

Lloyd and Ins ask that all operators limit QSO's to one per band per mode per country and please QSL to the Yasme Foundation, PO Box 2025 Castro Valley, California 94546.

ALBAHIATTY

After a seven week excursion in BY, Marcel F2SA hopes to be in ZA between the 15th January and 15th February Marcel who is a UNESCO official thinks

Marcel who is a UNESCO official thinks that there will be a possibility to obtain an amateur licence

DESECHEO ISLAND At the time of writing these notes there is an

unconfirmed report from a reliable source that this island will be activated next month. Watch out for anyone signing KH5I

UIITU

4U1ITU was active on the 23rd October

to celebrate the commencement of the International Telecom '83 Exhibition and Con-

A special certificate to commemorate this event in World Communications Year will be made available to all amateurs that contacted the station on this day and to SWLers on a heard basis on application to Rudi FBRU, who

KERMADEC

is the manager of the ITU

Latest reports are that Warwick should be active from this month. For latest reports on this much sought after area it would pay to monitor the international Pacific DX Net on Tuesdays and Fridays at 0600 UTC on 14 265 MHz -/- ORM

BURUNDI

Jim 'Bull' Bullington ex TYA11, now the American ambassador in that country has obtained an amateur licence. His tour of duty is for two years and his call is 8USJB QSL ON5NT.

MALPELOTELAND

Well this much wanted country was activated as planned and all Pacific island areas were well catered for The operating techniques used by the group, as found at this

O'Th were excelent Signals were not as strong as anticipated and it is thought that the operators were not as the strong of the sistent which is 375 metres above see level. To achieve better coverage of the world, 4 was envisaged that a helicopter, from the Columbian navel boat that took them out, would be necessary to achieve the optimum position. Apparently

this facility was not available
The unnecessary QRM on HK0TU stransmit
fraquency a something that everybody could
have done without. This back chat from the
guardians or policemen on the frequency
emanated from all continents and many
familiar volces, including those of VK
operators, were monitored dentiemen, no VL
operators were monitored and entiemen, and unablical let alone being illegal to QRM
unablical let alone being illegal to QRM

Maybe it is time that all amateurs brushed up on their DXing techniques, and perhaps it would be a good resolution for 1984, to assest railier than resist rare DXpeditions that cost figures that sound like telephone numbers to launch and that is not taking into account the unpaid hours of all the volunteers.

AVES ISLAND

another station

This island is located at co-ordinates of 63°38'W and 15°42'N with approximate dimensions being 570 metres long, 130 motres at the widest point narrowing down to thirty metres at the other extremty. The whole area is only three metres above see level at high tide.

In conjunction with the Radio Club of Venezuela's golden anniversary's celebrations it is hoped to activate this area at the end of February 1984 Actual dates are dependent on the Venezuelen Navy's commitments and a stay of three days is envisaged

The call will be YV0AA with both SSB and CW modes being used on envisaged frequencies from 160 through to 10 metres. QSL arrangements are in the hands of YV5DFi, PO Box 50332, Caracas 1050-A Venezuela.

WANTED COUNTRIES

The DX Bulletin conducts an annual "Wanted Countries" survey and in 1983 640 DXers were sampled. The top ten wanted countries according to the survey were ZA – 84%, VU/L—82%, XU 78%, 70 76%, XZ—

74%, VU7A — 74%, 3Y — 73%, CEOX San Felix — 72%, BY 71% and XV — 68%. Those wanting VK9M were listed at 27%, which looks like that it is now well down the

list.
It is wondered how true this sampling would hold for the VK operators. Perhaps it is some form of an indication to the much wanted smateur confirmations for DXCC.

LIBYA

G3SYM departed for Libya on a year's contract working for the Telecommunication Ministry and will attempt to obtain a licence

If he is successful, on returning home for leave at Christmas, he will return with a transmitter and antenna to operate during the rest of his stay. Here's hoping for a genuine operation!

ARRL DXCC

Latest news is that the recent XU operations will be accepted for DXCC according to the DX Advisory Committee vote. Also there was a recommendation that Spratty is to be related on the current countries tast but the final decision will be made by ARRL Headquarters.

Other news is that XZ9A alias 1Z9A etc will not be accepted, as the hobby is banned in Burma.

DATAR

Mike A71AD, a constant visitor on the International Pacific DX Net, in a letter recently received describes his operating conditions from a very neat "shack"

Conditions from a very fleat "shack"
The upper frequency station uses the FT1
transceiver driving a FL2100 linear which acts
as a buffer to drive an Alpha 77SX. (We have

always wondered why you always have a big signal on twenty Mike, now we know!) Mike uses a TH7DX on the higher bands, a 402BA yagi on 40 metres and an inverted "Vee" on 80 metres.

The upper frequency station used the FT1 and a FTV107R transcever which drives a Mirrage D1010 linear. The uplink antenna is a KLM 420-450-18C. The down link is catered for by a KLM 43-150-14C. The ERP of the system is approximately 800 watts. Mike mentions that he was the first foreigner.

to be granted an ATX licence since independence some fourteen years ago and as there is no club or bureau facilities all QSL's must be direct as per the callbook.

A note from F6AJA may clarify the confusion that existed in the early 1970's with the operation of VK0HM

Gerard F2/D, was operating on Kerpue en Island as FB8X, when a request was made by the Australian government for some assistance to the party that was on Heard Island This amateur volunteered for the expect tion was accepted, and contacted the VK authorities for permission to operate an amateur station whist there Permission was granted in the form of a talex that read "OK for operation on a rerivel at Heard".

Upon arrival at the island, this amateur saw the call sign VKOHM on the well of the swick and used it in lieu of his own F2UD or F8EXX/VKO Heard. At that time all the operators on Kerguelen used FBEXX and he naturally assumed it was the same for this Australian outpost. Gerard used this call during February and March 1971.

The former owner of the cell, WA6EAM complained to the ARRL and the operation was disallowed as being creditable for DXCC purposes

A genuine unfortunate misunderstanding that cost quite a few DXers heartbreak on not being allowed credit for a valid contact due to confusion and a possible language barrier



Mike at the controls of his super station

ANTARCTIC LOGS

Peter VK3FR, QSI. Manager for VK0AP, as with aome other QSI. Managers for Antarctic stations, will be receiving logs in the near future when the operators return home. This will enable them to process the balance of the cards that are outstanding, including those that have not been verified by the exchanging of logs on the ameteur bands, an excellent practice in theory, but one which is not always convenent to all parties.

JANUARY'S COLUMN

Owing to the early deadlines, due to the holiday season that typesetters and printers enjoy the January notes have been prepared in advance by Jim VK3YJ Don't miss Jim's summary of 1983.

CW SWLING WITH ERIC L30042

4EAT JETIZC KX80C, UABDC: VETAAQ, KF1Z, WSTMD. W7LNG, AJBN

21 MHz DJ68N F6FTT, FK8KAA/P F08HO, HBBBNI, HLOJ KH6DW. LUBDRB, "Z1EA JK2GAC, UK6HAA YE7AAO, YK6NHG. YJ8SYZ, WLTT Y54ZA YJ8MP 4S7WP

14 MH2 COZHT CSZON. CL1CHG. E BFG. ENSA. FKBBU FM7BZ FM7WH GSABN HASKFL 12AMH KHSCF KP4BBN CESNBB SPBBGA. VPPDR VL2SKF YBSASO. YVSANT 3B8FG 487NS 424MK

D.2XJ, F3NB, G3RHI OKIDAV, OZ9XD W*JY N4SU W8EGB VE1BB, Y24DO, Y39XO

7 MHz DL7AFV ENSA, HAEZG, HRYC, LXIPD, ONSBR TISBGA URZFU VEZHO Y84FN ZXSRW

3.5 MHz GMSJDR HA7JG, P29FR, SMECFY UA1DZ UK2RDX ZK9RW

1.8 MHz VK2DSQ. VK3(2) VK5(4) VK6HD VK7(2)

QSLs RECEIVED BY ERIC L30042

10 MHz CW CK5GN, EI4CL F2BS, GSAAK HBRAMO "ASDOM OERSLIN

OKIDWF/F KIKA K45E FKBDZ FMTCF FORGM HATRO (3 5) HCTCM, HLSCC ISOMVE LUBFAN FAZE SMTAN (3 5) SVNY TIZBBY TSCCH DUSSITE UNGBF (3 5) VKBNS (1 5) VP9HW YUZAWL WSRRR (NASA). ZS4U WWIEJ

WORKED ON THE EAST COAST

3D2GT WB2SAY XE2MX XE2MNZ ZX2MU

ZTMPX
3D2GT BY1AA*, C6ADJ FO6JP HKGTU, HKGR, T2ADE
VKGRC, VK4MAL VG9EH VG9JD, WA6OJO/KH6, XUTSS,
YB0BEG, ZC4YC ZF2GE, Z54PB.

3020M SYMPS SNRHEMM BOTAY, BOTATI, THAM BRISHWING ASPOL BYZAM SPIPK CLERS CLERK CESSE CONSIDERATE PRIMIL FORTT GISTPW GRAFF, HARSEN FROTT, HARVEL KITZ, BOTATI GISTPW GRAFF, HARSEN KITZ, KRZI, KARPO, KARPO, LATEU, LARP, LARPF, LARPF,

BIZDM, 3Y6AA, 8Y9IC, CZIRK, CZIRK, CESELS, CPRGR, CPRHO CPRHO CYTE, CTOZE BABBH, GIGNOF, JAZBAY, KCAUSV KLTAF, KPHDEXIVZA, LUSAMF, CAHWM, T77E, TIZCF, VKSBCWLH, VPZVO, WHZADG, VVSBGS, FVSBGS, ZBZBH, ZKIN, ZKIRS, ZPSFX

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* Denotes CW operation

3.5 MHz JF1IST VK9WCY

VKNHD ZLIAAS

SOME INTERESTING QSLs RECEIVED

BY1PK, FPBAA, GBNF/NWL NASGP HASMA, HV3SJ, LABPF ONOKF OHOW OHORIN, OZ1EOŁ, PY1EFM/PY0T SV1OL WAZUIW/DUZ.

THANKS

To all contributors and readers of this column, happy Seasons Grootings to one and all is extended from our OTH to yours, with hopes that 1984 brings health, happiness and lots of DX to one and all.

Remember that the curse of most DXers is

that most have to work and miss out on some of the "goodies" that are on the bands

Faces Behind the Key and Microphone





visiting VK, with Misti W3DOG.

THUMBNAIL

Peter Brown, VK4PJ 16 Bede Street. Balmoral, Gld 4171



1930

Eric., who was born in 1905, sat for his AOCP at the Daiby PO in late 1929 and his Morse test was carried out by Eber Lane who subsequently became a most senior PMG executive. However Eric had been interested in amateur radio well before 1930. Transmitting equipment comprised a Radio-

tron UXIDA audio output type valve. 'a emp filament, in split Colpitte oscillator circu. It Plate supply was approx 155 voits from a number of old 'phone type dry cells, cases punctured and immersed in water in gless jars.

Receiver was a LIV200 "soft" type valve.

regenerative detector with audio amplification
Antenna a "windom" type single wire

leeder, flat top 132 feet and 50 feet high Eric was particularly interested in 10 metres in his early days and counts XU2UU. China among his early DX contacts

in the late '306 Eric 'nvested' in a Phi: ps 25 walt transmitting triode, and took the 220 volt anode supply from the DC town mains Unfortunately little was known of sunspot cycles in those days and there were many disappointments on 10 metres in 1929. Brisbane radio of dentity. Russel F

Roberts donated a cup to the VK4 Division for operating above 14 MHz." Bob Beatson (ex VK4BB), 1929 Rev De bridge (ex VK4RJ), 1930, and A R (Mac) McKenze (ex VK4GK), were winners before VK4XN in 1932, 1933, and 1934 who retains the cup

Among Erics stories is one of a Puss Moth flight from Brisbane to the Downs and back experimenting with 5 metres

experimenting with 5 metres
Over 31 years on the 4QS Da by staff, from
the original 10 kW then high power untiretirement in 1970 was Erics main work high

On retirement Eric was awarded the imperial Service Medal VK4XN became active in Toowoomba from 1976 with in ted activity on HF bands and 2 metres.

90



SPOTLIGHT ON SWILIDE



Robin Harwood, VK7RH 5 Helen Street, Launceston, Tas 7250

Well, it is the end of the year and the final month of the World Communications Year 1983 There have been several events on shortwave commemorating this, for example both Radio Netherlands and Radio HCJB mounted amateur radio stations from their studios or sites. PASPCJ was located in the Radio Netherlands studios in Hilversum. while HC1.JB was able to utilise the antenna arrays at the Ecuadorean Gospel station site at Pifo, when these were not required for their broadcasts Unfortunately poor propagation prevented many in this area from either hearing or working them. As well, several administrations released special prefixes to the smateur service to celebrate WCY '83.

It is unfortunate that the amount of deliberate interference or jamming has markedly increased during the year. Oatenably the celebrations have focused on communications, yet there are some signals designed to deliberately frustrate that andeavour.

As the declining sunspots have caused propagation on the higher frequencies to fall way, there has been an increasing occupancy of lower frequency allocations, with the resulting congestion only too apparent Fortunately, some traffic is being re-routed with the communications satellities, yet developing nations have found that it is more economical to utilise HF communications.

Perhaps in 1984 we will see a possible growth in traffic and volume over shortwave frequencies. Many countries are modernising and expanding their external broadcasting outlets, wishing to communicate their views to other nations. However, it is a fact that many domestic receivers with SW capabilities. are not able to cope with the concested bands. That is why stations such as Radio Moscow dominate the bands with their superpowered senders and vast antenna arrays. drowning out the competition. Many organisations are either forced into erecting senders and arrays to punch through, or to alter their frequencies to where broadcasting is not normally heard

Therefore, I believe that the amateur community shou give thehnd the Intruder Watch Service and log any interloper that strays into our exclusive allocations. The amount of traffic from intruders on our bands is increasing and it we don't act and complain, we could lose them by default. Many of the intruders have considerably more power intruders have considerably more power of the properties of the control of the form of frequency shift operation, running reversals, blanks or often an unmodulated carrier. They do this to keep the channel occupied denying it to other users. This practice by intruders, I must add, is not confined to amateur allocations.

One phenomenon that has been around for a while is Long Delayed Schoes (LOEs) Although they been exerced they be presented to the they be they been exerced them. I haven't personally come into contact with them Basically what happens is that amaleur and commercial operators hear their signals several minutes after they have ceased treasmittion.

Of course, this has spawned a variety of theories ranging from time warps to UFOs However, Robert Freyman, a former scientist with the US government at Los Alamos, has solved the riddle. He proposed that occasionally radio signals became trapped in a conductive duct of plasma, created by the solar wind. This duct extends to the Troposphere, where it "blends" with the Earth's geo-magnetic field. Any radio signals in this region enter the duct. This is determined on the ALF and MUF, and signals are usually propagated into space towards the sun. However, if this duct collapses, the RF signal is reflected back to earth and is heard again, often after a considerable delay

Scientists at the Sowet Potar Geophysical Institute have researched this theory with experiments and have confirmed that this is in act what cause this LDEs. This phenomenon fact what causes this LDEs. This phenomenon regions, where the san'th magnetic field and the solar wind blend most efficiently Naturally, because of the USSP's geographic location, signatis or subject to LDEs Mr Freyman was awarded the Commemorative Medial of the Sowet Potar Geophysical OTHR publish shelped the scientists confirm the theory of LDEs.

Only a few months ago, one Melbourne Diver was wonderung if there was a correlation between exceptional MW propagation he was observing, and the sightings in central and eastern Victoria of UFOs. However it is more likely that there is some isonospheric ducting similar to LDEs causing this, rather than the "little green men". This consopheric ducting could also explain why some UFOs are tracked on call."

Well, Radio Australia, the oversæs service of the ABC has done some programme reorganisation, according to Media Network on Radio Netherlands. They are reportedly dropping transmission to Europe and North America, and concentrating instead on the californ singular experience of the ABC of the A

overseas You can hear it at 1610 UTC

Saturdays repeated at 0210 and 0730 Sundays Also the ABC Domestic Shortwave Station in Sydney - VLI - on 6 090 MHz, ceased operations as from Saturday 8th October It is unlikely to reappear for some time as it was becoming increasingly difficult to procure spare parts for the ageing transmitter I believe that two regional shortwave transmitters in the Northern Territory will be operational sometime in 1984. With VLI now departed, many SWLs are able to copy the 300 kW transmitter of Radio Luxembourg I believe that it is in English during the European night time in parallel to their MW outlet, but the majority of programming I hear is in Dutch The weekly Southern Cross DX Club net is

now heard an hour earlier at 1000 UTC on approx.3 570 MHz each Thursday. The reason being we have decided to keep the net on local time, as it was getting late at 1130 when we are on Daylight Saving Time This year, only Queensland and the Northern Territory, are remaining on Standard Time, as WA is going to try Daylight Saving again. The net will revert to 1130 UTC as from March.

will revert to 1130 UTC as from March.
Well, it only remains for me to wish
everyone the compliments of the Season and
it hope that you have good listening during
1984.

Rabin VK7RH

NOW AVAILABLE WEA BOOK VOL 1

Contains a wealth of historical information and photographs of early "wireless" days and approximately eighty pages of VHF projects to build.

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division or from Magpubs, the book
sales department of the Federal
Office.



All times are Universal Co-ordinated Tim indicated as UTC

AMATEUR BAND BEACONS EPEO CALLSIGN LOCATION

FREQ	CALLSIGN	LOCATION
50.005	H44HIR	Honiara
50.008	JA2IGY	Mie
50.020	GB3SIX	Anglescy
50 060	KH6EQI	Pearl Harbour
50.075	VS6S1X	Hong Kong
50.945	ZSISIX	South Africa
51 820	ZLIUHF	Auckland
52 013	P29SIX	New Guinea
52 200	VKBVF	Darwin
52 250	ZL2VHP	Palmerston North
52 300	VK6RTV	Perth
52 320	VK6RTT	Carnaryon
52,350	VK6RTU	Kalgoorke
52.370	VK7RST	Hobart
52,420	VK2RSY	Sydney
52.425	VK2RGB	Gunnedah
52 435	VK3RMV	Hamilton
52 440	VK4RTL	Townsville
52.470	VK7RNT	Launceston
52.510	ZL2MHF	Mount Climie
144.019	VK6RBS	Busselton
144.400	VK4RTT	Mount Mowbullan
144,420	VK2RSY	Sydney
144.465	VK6RTW	Albany
144 475	VKIRTA	Canberra
144.480	VK8VF	Darwin
144 550	VK5RSE	Mount Gambier
144 600	VK6R1T	Carnaryon
145 000	VK6RTV	Perth
147 400	VK2RCW	Sydney
432 057	VK6RBS	Busselton
432 410	VK6RTT	Carnaryon
412.420	VK6RSY	Sydney
432.425	VK3RMB	Mount Bunningon
432,440	VK4RBB	Brisbane

There are no listed beacon changes this month, although there will be a callsign change in the near future to the Macquarie Island beacon, More on this later Three new beacons are listed in VK6 - see text for details

Russelton

TWO METRES AND ABOVE

1796 171 VK6RBS

It has been very pleasing of recent times to be continuing to receive detailed reports of what has been happening on 144 MHz and above in New South Wales, and this month an indication of what has been happening in

Gordon VK2ZAB has sent along another letter outsining contacts from the Sydney area to various locations throughout NSW He reports "The most interesting happening was the

tropospheric refraction opening on 2 metres which occurred on 19th September (Local

"Bob VK1ZOR advised me at 2245 that there appeared to be an opening to VK5 and

~ **FIRM TIERY**

an expanding world

then promptly worked Col VK5RO in Woodville, an Adelaide suburb, I (VK2ZAB) made contact with Cot a tittle later and at 2258 he was 5x2 in Sydney, and I received Q3-5, S2-4 During the contact with Col, Peter VK3XDP in Bendioo called and was 5x3 in

Sydney giving me 5x5 in Bendigo. "The opening continued throughout the day and evening and although some unusual repeater openings were heard there were no further real contacts made to VK5 or VK3 from Sydney, I understand from the VK1 gang that VK5ZO in Mt Barker was heard in Canberra but I am not sure whether a contact was actually made.

"There are two new stations on 2 metres in Canberra, Peter VK3ZQS who is operating portable pending receipt of his VK1 call and ian VK1BQ who puts a good signal into Sydney on both 2 metres and 70 cm, with 100 watts PEP and 10 watts PEP respectively

"Two metre contacts with Doug VK3UM at Chirnside Park (Melbourne) have been continued throughout the month. The scheduled attempts at 2230 and 2245 each Saturday and Sunday (local days) on 144.200 MHz have resulted in contacts being made every weekend during September Participating stations have included Brian VK2QP (formerly VK2ZHT) and myself in Sydney, with VK1RK, VK1KAA and VK1VP in Canberra.

"Particularly interesting was the contact on 23/9 at 2235. Doug was good copy here for 27 minutes and tried 70 cm. His 80 watt PEP signal was heard here in Sydney by myself and Brian VK2QP for a short time on two occasions so it is now only a matter of time before the first 432 MHz SSB contact is made between Melbourne and Sydney

"VK2YEZ in Griffith can be heard in Sydney any time he transmits with his beam in this direction. John has also continued his 70 cm contacts into Melbourne. He has 150 watts PEP on 70 cm and has so far worked Doug VK21164 "Jelf VK2EJJ is another station south west

of Sydney at Wagga who can be worked from Sydney at almost any time. Sometimes Jeff is limited to 10 watts but still makes it. John VK2ZQX in Gunnedah, Don VK2ADY

in Tamworth, Doug VK2XDH in Uralla have all been active on 2 metres during September and can be heard in Sydney on 144.2 at 1030 almost any week night. Les VK2DSG at Duri also puts in an appearance on 2 m SSB after a long absence. He was 5x4 in Sydney at 1047 on 22/9.

Thanks for keeping us informed of your contacts Gordon, by doing so must lead to more eventual contacts as people realise there are stations to be worked on a regular

THE MELBOURNE SCENE

After a long written absence I have received a massive epistle from Doug VK3UM at Chimside Park, a Melbourne suburb, giving

Eric Jamieson, VK5LP 1 Duinns Road, Forreston, SA 5233

details of happenings in that area, and written whilst travelling on the train to work! I have extracted the relevant items of interest to readers, quite a lot being for my personal reading!

On the equipment side Doug says he came back to VHF operating after his soloum some years ago in VK8, as the result of an occasion when Boh VK4XV scoffed at the fact that he would be able to hear VK3UM on 2 metres meteor scatter. The challenge was sealed naturally when "a couple of dozen" was laid on the line!

Doug writes. "It so happens that on our first sked on 144,020 that we bumped into Eddie VK1VP and Bill VK4LC who had been doing the same thing for months on 144,015. Needless to say, by getting together we all started to hear each other aithough from Eddie to me was as expected, too close. Many half contacts were had between VK4LC, Angus VK4KAG and myself when we came to meet Gordon VK2ZAB Bill was consistently hearing Gordon for minutes on end and on what I strongly believe was 'aircraft enhancement!" "To cut a long story short I finally arranged

with Gordon to look towards Melbourne. Calculation indicated that with the systems gains at the time that +3 dB forward scatter signals were possible. On our first attempt this was proved correct and although not a full QSQ I was able to hear Gordon for 90% of the time and read him Q5 for 10% of the time My antenna then consisted of two 10 element beams. Next followed replacing the RG214 with heliax and fine tuning the preamps until I was able to realise an 0.8 dB NF (on the HP automatic noise measuring device). This resulted in the first of many Sydney/ Melbourne QSOs and the meleor scatter skeds were dropped in favour of a concentrated approach to forward scatter.

Four ATN 13 element vapis were next tried, spaced 16 feet horizontally and 14% feet virtically, with open wire phasing sections. This wire was abandoned as it could not be kept tight, so settled for a linear balun on each antenna and a 4 to 1 coaxial power divider This set up gave great results and the Sydney. Melbourne path became easy. Forward scatter reports received from as far north as Narribri (1000 km)

Because the tower was also needed for other antenna commitments, the four came down and were replaced with two 13 elements. But the four had a gain of almost 20 dB with classic side lobes at -14 dB and front to back 35 dB. Sun noise on a guiet sun was up to 9 dB. Having two unused 13 elements on the ground was irksome, so after some further thought it looked as though they might be placed in a four way configuration straddling the TH6 already in place! They were deliberately overcoupled to reduce the side tobes and finished up with 10% feet vertical. so that now the four are again giving almost 20 dB of forward gain with a slightly wider tront lobe without sole lobes. The 3 dB points are about "5" which reases the old point flata in right gain antenna can only be used if you had been assessed to the second of the second points and the second points. The second points are second points are second points and the second points are second points and points are second to disassessed to second points are second to disassessed points

THE VAGARIES OF PROPAGATION Doug continues "We became interested in

the propagation modes encountered. When you reach a situation of high gain allelina, very low noise front ands and a fair bit of sting, not lorgetting reliable guys at the other and with similar setups many things begin to happen that are not all explained in the 'best books'.

Forward scatter follows the practical computations that Sydney-Melbourne (distance) will provide signals twenty four hours a day with station system gains as described, but there are many times when there is not a trace of any signal. It is threatone summed that signals were scattered upwards at times.

"Aircraft enhancement. Here Gordon and I agree to disagree that this provides our basis for the regular (ho hum, contacts. This is our continuing theme for research' at this time. But what is certain is the enhancement that does occur Typically signals (on the noise floor) will rise rapidly over a thirty second period without flutter and provide signal levels of up to 24 dB on the Sydney path and over 50 dB on the Canberra path for periods approaching five and ten minutes respectively, viz Gordon can be Q5 S1 which increases to S5 for five minutes, while Canberra is inaudible normally, but signals have been seen to \$9 +20 dB (normally \$7) for up to ten minutes. Signals disappear as rapidly as they appear. Many times they are disquised by following flights and run into each other. It is not unknown for up to half an hour of continuous enhancement to occur

Signals are characteristically steady (viz. no flutter) with generally slow but not deep QSB When you think about it the cross town aircraft flutter most people know would not be present at these distances so a single signal path will predominate. What causes it? I believe there are three possibilities (1) Reflection off the condensation trails left by eircraft. (2) Reflection caused by the temperature sheer effect caused by the heat from the aircraft engines; (3) Reflection from the surface of the aircraft in short, if avour (3) but as mentioned earlier Gordon is not convinced but rather feels another mechanism is responsible. We are both working towards trying to establish what and why or how, and time only will tell

INTERESTING SIDELIGHTS

"Try this one During the widespread opining you reported a couple of months ago, the band was opan to Mick VKSZDR all day on the Saturday, and at 7 PM local I worked Eurociston, but the beam heading was 035° and signals 39° 20' db and the direct path 57th Delinite reflection media which I have never encountered before or since. At the same lime Garry VKSZHP reported

working VK7 on 70 cm on the same heading only on that band the direct path was stronger! Les VK3ZBJ found the same conditions.

conditions.
"Another interesting 'effect' noticed on odd occasions with Gordon VK2ZAB's signal is a hollow sound, almost to the point of an echo.

Queer and unexplained

"Sun noise is also a problem on early morning skeds and limits the noise floor (which thankfully is either hopeless or excellent with the latter predommating). As most experienced 2 metre operators have found, sun noise can, for short periods (even when elevated well above the horizon) reach

"The VKSRSE beacon Generally, Les VK3ZBJ and myself (VK3UM) can always delect the signal but for most others it takes tropo enhancement for them to hear it. I use it for beam alignment and roughly checking meteor counts."

OSCAR 10 Further from Doug "Last month installed

S9 proportions

The telephone' (viz' Oscar 10) and what a boon for getting just what is going on around the world and for the setting up of skeds. We have set up 145 960 (down link) as a VK VHF/UHF calling frequency and the group expanding. Has already proved its worth.

"For Oscar 10 i put up 2 x 16 et on 432 and 2 x 10 et on 145, the former fed with heliax, end run up to 100 watts output and use the system for terrestrial purposes. All antenna horzontal on an AZTEL mount. Front end is not too bad as i can consistently get about 9 dB of sun noise on 432."

SKED TIMES AND PROCEDURES "Gordon VK2ZAB and I (VK3UM) schedule

on 144.200 This was chosen to be the best compromise to ChSA, beacons atc Times are 0830 to 0900 EST (2230 to 2300 UTC) with time extended if necessary on each Saturday and Sunday

"Gordon calls for the Inst thirty seconds of a each minute and I for the last thirty seconds of seach minute and I for the last thirty seconds maily We both break to allow for all who can maily We both break to allow for all who can only give up you. All over are set expert part (viz. litteen seconds) so please, employly joining in only give up your gend faishly history or the hearing meteor purps please call by giving your cellaging only, we know ours!] for it is very firstitating to hear your cell ask times at your cellaging only. We know ours!] for it is very firstitating to hear your cell ask times at

occurron and reserve the Od 2000 Chreating occurrence of the past 2s, months, including some events of the past 2s, months, including some events difference; i have now worked live different Sydney stations which is fun considering it had never been done before (going back 5 months). "As Gordon says, its the forward scatter "As Gordon says, its the forward scatter."

mode that's more interesting than the 'Rash tropo' enhancements. This is always present regardless of 'conditions'. Plently of guys are improving their systems at present and an 'expanding world' of VHF is resulting. As a well known Frankston station has been heard to say on many occasions "it's no good having a big mouth but wax in your east!". It still simulates me that people go out and buy 40-100 wat at mapiliers for 425, feed in to their 4 by X wat ampiliers for 425, feed in to their 4 by X.

element array via RGB and ponder why the band is not open! The economics of the amplifier cost versus that of buying heliax would put them well in front with their existing rigs." (Couldn't agree more Doug 5LP.)

MELBOURNE ACTIVITY

"On the serious side of things there sort much at present Mently Les KY35BJ, Carry KY35H, and VK3UM, although many appear out of the woodwork on a good opening Hopefully some may be inspired to give it a bash but it's the same old thing — bands are only open during summer and the shacks are shut in winter."

Thanks for the comprehens we fill in of year.

Thanks for the comprehens we fill not lyour activates Doug I have quoted from your pages of some length as the material is relevant and interesting Maybe some wife the selevant seleva

MULTI-BAND BEACONS IN WA Watly VK6KZ has written advising of the installation of a new multi-band beacon at

Busseton, south of Perth, on 8th October, and operating since 0630 UTC that day Frequencies are:144 019 MHzt, zero beak down), 432 057 MHz and 1296 171 MHz "As you can note, these are harmonically

related, and the system comprises a common 14-4019Mitz free source A 72Mitt crystal is used and this is 'requirent', shift keyed About On white all 44Mits, and from the transmitter the system of the system of the system antennas. The 23 watts of 144 Mitt signal is eled intrough the first power divider with approximately 10 watts fed to two 5 element horizontally polarized ytaps. On yagi is pointed at Perth (1014') and the other to "The other half of the power goes to a "The other half of the power goes to a

where Unies has not not places 1028 to a second power divides and a second power divides rends power to the 422 MHz and second power to a 1286 MHz variator inple. The 422 MHz array is a soreon reflection with the 610bs frouting Adelands. Burbury and Parth The 432 MHz array is a soreon power to the 1250 MHz the 1050 frouting Adelands. Burbury and Parth The 432 MHz and 1650 MHz and

"The frequencies were chosen to avoid the EME schedules on 432 MHz and to give reasonable frequencies in the 144 and 1296 MHz bands The frequencies conform with the WIA Band Plan in that they were chosen because of the special circumstances of this beacon(s).

"The beacon is operated by the WA VHF

Group (and paid for by it) with the help of the Geographe Radio and Electronics Group of Bussetton who have it at their meeting place radio shack

Construction was a team effort with Don Graham VK6HK, Barry Grey VK6ZSB, John Lehmann VK6ZK, Bob Blianco VK6KRC and myself VK6KZ being most involved. A modular design was chosen to provide flexibility and easy maintenance or repair Shortly a 432/ 1296 MHz beacon should be installed in Perth and once sites can be finalised there are plans for 144 MHz beacons at Exmouth and Norseman

ACTIVITY IN WA

"The Manimup (Max VK6FN) to Watheroo (Peter VK6ZPG, path of 400 km on 144 MHz continues to be very dependable with Bob VK6KRC in Perth in the centre and very active. This is an almost nightly sked with those three John VK6ZK and Ron VK6FM in Perth continue checking 144 MHz propagation to Wally VK6WG in Albany, Last week Steve VK6ASF (Exmouth) was worked via the Geraldton repeater and he indicated Indonesian 2 metre signals were coming in at that time. There were no signs of Steve direct on 144 MHz in Perth but Denis VK6LD 200 km south of Parth was able to work Steve direct on 144 MHz SSB with Steve using two x 5/8 wavelength vertical antennal People from Bunbury, 470 km south of Geraldion were elso able to work Steve in Exmouth via the Geraldton repeater Roll on summer!

'Don Graham VK6HK and I have pushed our 3.5 GHz working to 80 km and look forward to trying the ducting possibilities when they occur I understand the 10 GHz beacon in Perth is still running well. Activity on that bend has fallen since Roger Nottage VK6NR left for Tesmenia

'Wednesday morning 12th October We have had at least six hours of 432 and 1296 MHz reception of the beacons from 0900 to 1500 UTC Thanks Wally for that atest information,

and your new beacons have been added to the beacon list I hope anyone hearing them will advise Wally as even 2 metre signals don't come too eas y from the far west coast of WA.

MOBILE VK6RO/M ON HOLIDAYS Graham VK6RO has once again headed

north with his 6 metre equipment and had a good time working JAs. 150 of them on 50 MHz and all from the mobile IC505 and 10 walls output to a quarter wave mobile whip on the roof of the car. There were a total of ten openings starting from 25th August at Carnaryon with one JA at 1027 UTC

On 26th August at Carnaryon one opening 0700 to 0913 working thirty five JAs. 27th August Dampier one opening 0623 to 0820 and nine JAs 28th August TV on 49 750 at 0920 and 1130 at Damper 29th August 49 750 TV again at Dampier at 0505 and 0710. 30th August JA2IGY beacon 5x1 at 0740, with TV on 49 750, at Port Hedland 31st August Port Hedland, two openings, 0750-0830 and

0945-1040 with thirty six JAs worked 1st September At Dampier, one opening 0836 to 1028 with six JAs 2nd September Two openings at Dampier 0724 to 0823 and 1042 to 1319 with forty JAs 3rd September: TV on 49 750 0800 and 1000 at Dampier 4th 1006 to 1225 and twenty three JAs worked 5th September Dampier TV on 49 750 at 0526 49 750 at 0655

and 0803 6th September, Carnaryon, TV on Graham noted the following "On 26th August JAs were 5x9+ on 50 MHz in QSOs but

JAs not hearing VK6RTT beacon only 3 km away on 52 320 MHz. This also happened at * other times "In many of the day-time openings the MUF

probably only reached 50,300 MHz and it certainly never got to 52 MHz "Only two night-time TEP openings, on 2nd

September and 4th September The difference between 50 and 52 MHz

was outstanding. I only heard one JA on 52 MHz and none were worked there. Last year I worked eighty six JAs, this year 150, mainly due to the use of 50 MHz

"I have now worked 953 JAs while mobile on four holidays in the north-west of VK6 during 1980, 1981, 1982 and 1983, and all worked with 10 to 20 watts output and quarter wave whip."

That's a good effort Graham and thanks for writing. It will be interesting to see what happens over the next few years with the sunspot cycle at a low point, and any comperisons which can be made on 50 and 52 MHz. If you continue to make trips to the north I would expect you to be able to draw some conclusions!

NEW ZEALAND VHF FIELD DAY

Readers are reminded of the annual VHF to SHF Field Day being held in New Zealand on 3rd and 4th December. On Saturday 3rd December the field day operates from 0500 to 1100 and Sunday 4th December from 2100 to 0300 UTC and all bands from 6 metres up will be included it may well be worth while turning your beams in their direction for possible contacts, particularly if you live in the Eastern States

SIX METRES COUNTRIES LIST

It is proposed to have the first listing of countries worked by Australian amateurs in the February 1984 issue of "Amateur Radio" It was decided to not print the list in January because the closing date for copy in Melbourne is 18th November and the consequent problems associated with production over the Christmas holiday period Therefore, you have one last chance now to upgrade your former list if you have already submitted it to me, or to send your list if you haven't already done so. The method of sending information was published last month and must follow this format. Those lists already to hand include some very good tallies. It is important that any list for inclusion be in my hands no later than 23rd December, after that date I cannot guarantee inclusion this time.

MACQUARTE ISLAND

The operation by Peter McLennan VK0AP has now ended. The equipment however has been handed over to David Rasch VK0CK David's home callsion is VK5CK

A new EPROM for the keyer with David's call of VK0CK has been provided David has also taken his own TS660 with

The equipment on loan is courtesy of Lionel

VK3NM who provided the major items and Gij VK3AUI The major items are an FT680, a Lunar 100 watt amp ifter and a Werner Wulf

The keyer may shift to 52 150 MHz and readers will be advised when operation has commenced

Those who have still to work this rare six metre country have another year of operation

DENERAL NEWS

The summer DX season is a most upon us and we will probably see an increase in Es activity and number of days for openings whilst in the low part of the sunspot cycle. And don't over ook 2 metres during periods of high Es activity, especially when short skip is around Two metre openings if any, will probably be only of short duration, so don't waste time talking about yourself or equipment, get the signal reports over and go looking for someone else so q ving as many as possible to share in these unique openings

This issue starts my fifteenth year of writing these notes. I thank all my faithful correspondents who by the rinput make the pages possible. The content may not suit everyone but there are obviously plenty of people out there who do get something from the notes judging by the nice letters I receive. Thanks everyone. I do the best I can for you and for the art of VHF but much of any access the column may enjoy directly relates to the input which you, the reader, gives it by your etters setting out your exploits and that of others on the VHF bands

One continuing compounding problem for me as your Sub-Editor is the fact that I still need to work to keep the wolf from the door. and my work as a television technician is very demanding on hours which are frequently very long and hence i run into problems with time to do all that I would like Hence, I often have long periods without being able to even get on the air which grieves me. Hopefully this will all change before too long as I propose retiring at the end of 1984 and this should give me time to improve the input to the column of for no other reason that , should be able to fire up the gear more often I would dearly like to be involved in the scatter work that Gordon VK2ZAB and Doug VK3UM and others are presently conducting, and from 1985 onwards I w. I be available for specialised work in this field. I a ready have the equipment capability but not the time to use it

I take this opportunity of extending Seasons Greetings to all my readers and hope you can work plenty of DX. May Father Chr atmas be kind and present you with that much longed for transceiver or other piece of equipment, and that it will not cost you a fur cost or new dishwasher for the XYL as we My thanks to the Editor of "Amateur Radio" and others associated with its publication for bearing with me all these years, and having to put up with my typewritten copy for so long! I must say however, that the treatment given me by the Editor and his staff has always been very generous and there have been very few items submitted which have not been printed, so we must have some mutual understanding

Closing with the thought for the month "The reason so many politic ans stand on their records is that they are afraid somebody might read them!" 73 The Voice in the H. Is.

September Two openings 0711 to 0735 and Page 58 -- AMATEUR RADIO, December 1983



ustralian Ladies Amateur Radio Association

Well another year is nearly over and for ALARA it has been a very eventful one. In July our AGM was a success with all executive positions filled.

In August we celebrated our eighth birthday and plans are progressing well for our first get-together at Mildura in September, 1984. Ouite a lot of interest has been shown and hopefully it will be well attended

Our membership is increasing monthly and we are always pleased to hear from new YLL on air and hope they will join our group. Welcome to new members.— Alice XYL of WSJPEC on 9th October, 1983 and to Lois WBSEFQ on 19th October, 1983 who was sponsored by Gwen VKSDYL. Welcome to Australia to Siegi VK4VSF formerly P29NSF, a member of IALARA for some than.

memoer of ALAHA for some time.

WCY some of our members were involved
in activities for WCY through their zones and
clubs and also a couple of magazine articles
have helped to publicise the women's
involvement in amateur radio.

1983 has seen a number of women mowing forward into more prominent roles in the WIA and this is an encouraging sign that we are being accepted into what was for many years a mainly male domain. Two of our members are now federal councillors and several are now office bearers at zone leves.

ALARA's Contest No 3 will be over when you to all you read this and again I say thank you to all you read this and again I say thank you to all you participated and remind you to plesse send your log in by 31st December, 1963. Remember the is the first year to be counted for the Five Year Trophy so get your log in to me so you are slighble for it.

MEMORIAL TROPHY

The Townsville Amateur Radio Club has provided a magnificent trophy to commemorate the memory of Mrs Constance McKenze OBE, formerly VK2FV, the first licensed YL and woman member of WIA Mrs Mac is well known for her teaching of Morse

code to over 10 000 servicemen during WW2.

ALARA feels very honoured to be offered
this trophy for a CW section of their contest
and the committee is at present working on
how best we can incorporate this trophy into
our contest next year. Watch this column for
details. Our thanks to Air Bill Woodger and the
Townsville ARC.

ALARA's weekly net for the Daylight Saving Time period is at 1000 UTC this hopefully will suit more people and the new net frequency is 3,580 MHz ± QRM

3.550 M+2: GDRM on member Joy VXCEBU.
Congratuation to member Joy VXCEBU.
Congratuation with carendar her had won the
Bronze Swagman Award for Bush Versel
Bronze John Share Swagman
Versel
Bronze John Share
Bronze John Share
Bronze Swagman
Won other prizes for her "senibbling" (Joya
Bronze Swagman
Won other prizes for her "senibbling" (Joya
William Universel
Bronze Swagman
William Share
Bronze Swagman
William Share
Bronze Swagman
Bro

Margaret Loft, VK3DML 28 Lawrence Street, Castlemaine, Vic 3450



Ruthanne WB3CQN in late November early December. Mavis VK3BIR is arranging a busy day on 10th December which will give some of the YLs a chance to meet Ruthanna.

I would like to take this opportunity to thank all members of ALARA for your support and news for this column, so very necessary to keep the interest in us alive and well.

ALARA wishes all our readers a very happy and joyous festive season and may 1984 be all you would wish for yourself and families.

Until next year drive safety and I look forward to another year with you all



DD 70 DO MENGE THOUMS

"GREEN GINGER NIP" by Joy Collis, VK2EBX The heat was oppressive, the blowfiles

hummed loud,
The whirly-winds blew up the dust;
And the plane that the young outback

minister flew
Was the colour of reddish-brown rust
Three Sundays the little church out in the bush
With the earth and the sky slept in union,
But the fourth Sunday woke with a bustle and

stir
For the once-a-month Holy Communion.
The minister, earnest and solemn of face,
His sermon rehearsed and amended,

Flew the battered old plane o'er the featureless plain
As the morning sun slowly ascended.

He bumpily landed, and bounced to a half On the runway 'twas hard to define! As he stepped from the plane he was gripped

by a thought! He'd forgot the Communion wine!!

The people swalted in chattering groups, While children played noisily round, As the parson approached, and without more ado.

His diferring began to expound.

A young lad came forward, a freckle-faced kid;

"Please sir, my ded's got some home brow.

We live lust a little way off from the church.

We live just a little way off from the church, I could go get a bottle for you."
"Why, thank you, young Tom, that is really

most kind."
Off he went at a pretty fast clip;
And returned very quickly with, clutched in
his hand.

A battle of green ginger nip.

The service proceeded. The wine, duly biassed, Was passed round the small congregation, But the potency of that netarious nip

Was the subject of much speculation!
For 'twes said of that brew that a thimble or

two
Would lay an ox out in his stable,
So proceedings took on a more boistarous
note

As the cup was returned to the table.

The last hymn was warbled with much voice

The last hymn was warbled with much voict and pep.
Though some reached "Amen" far too soon.
With some of the singers a bit out of step

And most of them quite out of tunel
The organist's playing, so slow and sedate,
Took on a more rollicking beat,
As, the blessing pronounced, the people

arose, To emerge once again in the heat.

The bottle of Communion "nip" had been large.

The number of celebrants small.

The minister sighed as he picked up the cup —

"Tis my duty to finish it all!"

Twas late when the little plane started it's run, And shakily climbed in the blue, And that minister cannot recall to this day How he sat in the cockpit and flew!

And he still fires his plane in the heat or the rain,

But one thing he'll always opine
The first thing he always packs into his bag
is the Holy Communion wine!



amsat **aus**tralia

NATIONAL CO-ORDINATOR

INFORMATION NETS AMSAT AUSTRALIA

Control VK5AGP Amaleur Checkin 0945 UTC Sunday Bulletin Commences, 1000 UTC Winter 3 680 MHz

Summer 7 054 MHz
AMSAT PACIFIC
Control JAIANG

1100 UTC Sunday 14 035 MHz

AMSAT SW PAC FIC Control W6CG 2200 UTC Saturday 21 280 MHz

Participating stations and listeners are able to obtain basic orbital data including Keplerian dements from the AMSAT Australia riet. This information is also included in some WIA Divisional Broadcasts.

ACKNOWLEDGEMENTS

Contributions this month are from Bob VK3ZBB, Ron VK5AKJ AMSAT Telemakland the UoSAT Bulletin

OPERATING REPORTS

Ron VK5AKJ and Tom VK5ATA have reported the reception of partied telemetry from OSCAR 8 it does appear therefore that whist in periods of sun ight sufficient power is being developed by the solar cells to produce this intermittent operation of the beacon Ron and Tom are also extremely active on the RS Ser es and report that there is st a dedicated group of Mode A operators getting the true feel of satel ite working prior to tack, no Mode B and or Mode L. OSCAR 9. continues to function excellently with considerable interest centred on the results that HB9RJV and HB9RKR have ach eved with the CCD camera experiment. From the picture taken on 21st September 1983 they have constructed a mosaic using their colour computers and believe that the Sea of Marmara and Islanby are featured. The 1200 Baud telemetry channel continues to provide a wealth of information either as telemetry or bulietin OSCAR 10 Mode B operation is becoming increasingly popular and as each day goes by, another "new" country appears on the 'bird' which attracts the QRM that one comes to expect on 20 metres during the CQ Word Wide DX Contest QRP days on Mondays and Wednesdays continue to highoht the fact that high upting powers are not paramount for effective communication up ink powers of much less than the QRP maximum 100 watts EIRP are proving most effective. Listening around the passband it does appear that the imiting factor is the ability of operators to HEAR the downlink siona s How about you? OSCAR 10 Mode Lis at this stage proving to be difficult to access unless an uplink power of at least 10 kilowatts EIRP is used. There does appear to be a faulty antenia relay on board the transponder, however, the designers are confident that with time the relay may lose the 10 d.8 of attenuation currently in the system. Not withstanding there are operations who can muster that magnitude of power and communicate Reg VKSQR is the only Australian analiteur to SSQ through Model. at this time analiteur to SSQ through Model. at this time.

UoSAT-B

As reported in last month's column a launch has become available for low altitude orbit and the University of Surrey has submitted a proposal to accept that launch. This month we have a description of the system experments and an update on the status of preparations.

SPACECRAFT SYSTEMS

The UoSai-B spaccraft will carry a number of systems experiments along-side the scientific experiments described in last monit's column These system experiments are concerned with developing an improved, cost-effective spaccraft bus and experiment support facility for future amateur low-earth orbit missions — with special emphasis on low-cost Get-Away-Special (GAS psyloads on the Shuttle).

1) NAVIGATION, ATTITUDE CONTROL AND STABILISATION

A low-cost medium performance stabilisation system is an assential feature for most low earth orbit secondary or GAS psyloads. The stabilisation mechanisms most suited to these requirements appear to use soin. magnetic and gravily gradient techniques as none of these need employ expendable spacecraft resources for their long term operation. The UoSAT-1 mission was primarily intended to be earth-pointing utilising gravity gradient methods after an initial inertial, spin stabilised period - the necessary attitude manoeuvres being effected by on-board magnetorquers. The very simple navigation instrumentation and single-axis magnetorquer on UoSAT-1 performed well, if with some difficulty due to their simple nature. The spacecraft was spin stabilised and successful magnetic attitude manoeuvres. demonstrated complete control over the spacecraft dynamics and placed it in the correct attitude for gravity gradient stabili sation The stabilising boom, however, was prevented from deploying fully due to a snag of the cables feeding the scientific magneto meter within the tip-mass on the far end of the boom. Even with only a short (1 m) deployment of the boom, the spacecraft was successfully gravity gradient stabilised for a few days with marginal stability after which it was returned to its spin stabilised state. The experiments carried out with UoSAT-1

demonstrated the basic feasibility of a low-

Colin Hurst, VK5HI 8 Arndell Road, Sa spury Park, SA 5109

cost attitude control and earth-pointing stabilisation system, however, the simplicity of the navigation sensors and the partial deployment of the boom prevented the study and evaluation of the operational performance of the system It is proposed, therefore to include improved navigation sensors (eg. sun angle sensors, earth horizon sensors. improved navigation magniformater, on UoSAT-B in addition to soin-axis and spinplane magnetorouers and a reliable boom. This combination will enable the spacecraft to be navigated to an expected accuracy of within ±1 degree and a combination of passive nutation dampers and active magnetic damning (using the on-board computer, will contain the nutation and libration of the spacecraft of within an expected ±2 degrees.

2) COMPUTER HARDWARE, SOFTWARE AND MEMORY TECHNOLOGY

On-board memory storage has been a perennial requirement for spacecraft and is now highlighted by the proposed Packet Radio Communications Satellite (PACSAT) being studied by AMSAT Large amounts of solid-state memory (as opposed to tape recorders) is becoming increasingly affrective, however, little experience has been gethered as to the performance of many of these devices in a long-term space environment. As these devices represent the core of a PACSAT type spacecraft the UoSAT-B mission will provide essential data in conjunction with the Packet Communications Experiment, various types of CMOS static and dynamic memory devices and a CMOS NSC800 microprocessor will be flown to assess their performance. An RCA 1802 microcomputer will be employed as the main spacecraft computer, as on UoSAT-1 The basic architecture will be unchanged and additional peripheral interfaces will be added to support the UoSAT-B experiments, Software and data witt be loaded from the ground command stations into the spacecraft computers as necessary

3) TELEMETRY SYSTEM The telemetry system used on UoSAT-1 with

be upgraded with the addition of an optical hardware generated checkum for sech channel. This embrguous formal of the optical channel. This embrguous formal of the optical channel numbers to each block in the same format as the current energies channers an amproved devel lacinfy wit sidow selection of order to make space for these facilities. The STIT, 11B search soft and SOII and OV domninx formats will be removed shihough alone of computer.

4) COMMUNICATION SYSTEMS

The simple and effective transmission formats adopted for UoSAT-1 have proved highly successful for recenting by low-cost groundstations but suffer from certain limitations at low signal levels and in noisy environments it is proposed to experiment with error-resilient coding techniques and other transmission methods (whilst remaining simple and cheap to receive) eg. PSK. The currently proposed PSK modulator will have facilities for 9600 Baud data transmissions The 2.4 GHz experimental beacon on UoSAT Thas generated great interest amongst radio amateurs and has proved a viable data downlink. It is proposed to provide a 2.4 GHz engineering downlink from UoSAT-B carrying telemetry and experiment data. Once LloSAT B has been stabilised and commissioned, one uplink will be made available to radio amateurs for general access to the digital Packet Communications Experiment in order that the effectiveness of the on-hoard traffic control software can be studied in addition to the hardware in preparation for future PACSAT missions

UoSAT-B SPACECRAFT STATUS — UPDATE 12TH OCTOBER, 1983

No confirmation of flight has yet been received from NASA-HQ, nowever work proceeds on the preparation of the UoSAT-B spacecraft for a nominal launch date of 1st March, 1984

The structural design has been completed. The Spaceorat instrace Fatting and the sunch vehicle Attach Fitting have been completed and the former has now been shipped to the auncher at MDAC. The spaceoraft structure is we uncerval as structural components have been completed find on the more than the structural components have been completed finding the module boxes Further lipating fasteners have to be procurred before

LAUNCHES													
NUMBER	NAME	MATTON	BATE OF Launch	PERIOD MINS	PERIGEE KM	INCLN DEG	FACILITIES						
1963-075A 1963-076A 1963-077A	COSMOS 1484 COSMOS 1485 TELSTAR 3A	USSR USSR USA	20th Jul 25th Jul 20th Jul	97 3 92 2 663.55	673 395 37459	505 209 105	98 72.9 23	SI TM SI TM FM TELEMETRY 2250.5 MHz					
1983-078A 1983-079A 1983-080A 1983-081A	COSMOS 1485 COSMOS 1487 CS28	USSR USSR JAPAN	31st Jul 3rd Aug 5th Aug 5th Aug	100.8 89.5 650	820 305 36807	766 226 169	74 f 82 3 28 9	S TM S TM CS Output 2285 5 MHz					
1983-082A 1983-083A 1983-084A 1983-084B	COSMOS 1488 COSMOS 1489 COSMOS 1490 COSMOS 1491	USSR USSR USSR USSR	9th Aug 10th Aug 10th Aug 10th Aug	90.2 88.3 678	397 323	208 162	72.8 84.7	SI TM SI TM SI TM					
1963-086A 1963-086A	COSMOS 1491 COSMOS 1492 PROGRESS 17	USSR USSR	10th Aug 17th Aug 17th Aug	88.7	257	196	51.6	SI Auto Cargo Spacecraft					
1983-087A	COSMOS 1493	USSR	23rd Aug	90.2	395	207	72.9	SITM					

A Sosceraft Design Review was held on

The following salerines re-printed or declayed 1973-0764. MCL_NYR_2 1 38h Ju 1973-0764. MCL_NYR_2 1 38h Ju 1973-0764. MCL_NYR_2 1 38h Ju 1983-0714. COSMOS 1462 27h Ju 1983-0714. COSMOS 1465 9h Aug 1983-0714. COSMOS 1465 9h Aug 1983-0804. COSMOS 1467 1814-081 1983-0804. COSMOS 1467 1814-081 28h Aug 1983-0804.

Monday 28th September where the final experiment compliment and system design were examined, resulting in a number of changes in the light of the last few weeks work. Further minor changes will inevitably continue to be made as a result of design and prototypring experience. Negotiations have been completed concerning the procurement of solar arrays. Batteries remain unresolved as yet, although considerable elfort is being

expended by Larry Kayser on procurement Latest reports from Canada look prom sing. One source of small pin-pu ers has been identified for they-mass caping, although others are still being sought. The Navigation Sensore Dectronies PCB extruder has been protrotyped using in-house PCB CAD, the PCB produced and constituted. The sun sensor protrotypes and being tested. Artwork for the CCD and relating to the control of the CCD and control of the control of the CCD and relating to the control of the CCD and relating to the control of the CCD and relating to the CCD and relating to

OSCAR-10 APOGEES DECEMBER 1983												-	JANI	IARY		ES							
			APOGEE		LLITE	SYD		AM III			BTH				APOGEE		LLITE	SYE		AM H			ятн
DATE	DAY #	QRBIT #	UTÇ HHMM:88	LAT	LONG Des	A2 DEG	EL DES	AZ DES	EL DEG	AZ DES	EL DEG	BATE	BAY 8	ORBIT F	UTC Hammess	LAT BEB	LONG	AZ DEG	EL	AZ Beg	EL DEG	AZ DEG	DEB
DECEMBER 1	338	351	0627 49	18	257	31-		321	19	344	31	JANUARY 1		٠									F
2	336	353 355	0548 54 0505 57	18	247	318	18	330	24 27	356 B	33 32	2 3	2	417	0756:30 0715:33	20	207	1 1			t	302	2
3	338	367	0424 59	18	229	337	27	341		19	30	3	4	421	0634.35	21	288			300	-3	315	ы
	339	369	0344:02	16	219	347	29	3		29	27	8	5	423	0553.38	21	278			358		323	20
ê	340	361	0303:05	18	210	359		14	28	38	22	6	. 6	425	0512-40	21	289	304	2	313	10	332	2
7	341	363	0222:07	18	201		30	24	26	45	16	7	7	427	0431 43	21	260	310	8	321	15	342	2
8	342	385	0141 12	18	191	21		33	21	53	10		В	429	0350:48	21	251	318	14	329	20	352	5
8	343	357	0100:15	18	182	30	24	42	16	59	3	9	9	431	0309:51	21	241	326	19	998	23	3	21
10	344	309	0019 18 2338-20	19	172	39 47	19	49	15	1	t	10	10	433	0228:53	21	232	335	53	348	25 26	14	21
	344	373	2338:20	19	154	54	13	56 62	-2	1	Ī	12	12	437	9106.58	21	213	355	26 27	359	26	33	2
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	348	378	0915-02	19	310					299		14	14	443	2304.09	21	165	26	22	37	16	55	
15	349	380	0834'04	19	301				,	305	7	15	15	445	2223 11	21	175	35	18	45	10		+
	350	382	0753-07	19	291			{		312	13	18	16	447	2142 14	22	166	43	13	52	4		ł
	351	354	0712:09	19	282		1	303		319	19	17	17	449	2101 16	22	157	50	7	58	2	1	ŧ.
	352	386	0831 12	19	273	301		310		326	24	18	18	451	2020 19	22	147	56	- 1	1 1		1 1	t .
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	355	390	0509 20	19	264	372		325	29	348	31	20	21	456	0637-58	22	304					305	1 3
221	356	394	0347 25	20	235	331		344	26	11	30	22	22	458	0637:58	22	294					311	Hi
23	357	395	0306.28	20	226		26	355	28	22	26	23	23	460	0516:03	22	285			202		319	1,
24	358	398	0225.30	20	215		28	6	28	31	24	24	24	462	0435:06	22	276			309		327	21
25	359	400	0144.33	20	207	2	29	17	26	40	19	25	25	464	0354:08	22	266	307		318	D	336	24
	350	402	0103:35	20	197		27	26	23	47	13	26	26	466	0313:11	22	257	314	9	324	16	346	23
	391	404	0022 41	20	188	23	25	35	19	54	7	27	27	468	0232 16	22	247	321		333	20	356	28
27	361	406	2341 43	20	179		21	43	13	60	-0	26	28	470	0151 19	22	238	329	19	342	23	17	28
29	363	408	2300:48	20	169	41	16	51	7	1		29	29	472 474	0110:21	22	229	339 349	23 25	352	25 25	27	20
	353	412	2219:48 2138.51	20	150	48 55	10	57	1	1		30	30	474	2348:27	22	219	349	26	13	25	36	1/2

Mano Ac., na (1119HBG) has agreed to provide an improved Navigation Magnetometer. Most 1802 computer experiment interfaces have been prototyped in preparation for PCB layout. The PCB layout of the telecommand decoders and multiplexers is under way Electronic component procurement is progressing we. Detailed specifications of the spacecraft system and interfaces are being prepared These wil be posted once the transients have died away!

SATELLITE PREDICTIONS

, have received considerable feedback on the subject of predictions and the main area of concern centres on Oscar-10. One positive suggestion was to provide the angige for the day in the knowledge that for a time period plus and minus three hours of apogee that beam heading remains virtually constant However, that plus and minus three hour window only holds for apogees in the centre of the overall (currently 14-15 days) cycle At the start and finish of each cycle the TOTAL access to Oscar 10 may only be one to two hours maximum

Acting on this suggestion I have computed the relevant information for Perth. Adelaide and Sydney for December 1983 and January 1984 and comments either for or against the predictions in this form would be appreciated as they will absorb considerable magazine enaca

SATELLITE ORBIT ELEMENT TUTORIAL

An excellent article explaining the significance of elliptical elements has been compiled by Phil Karn KA9O AMSAT Vice-President, Engineering, It details in the most simplistic manner the elements and considerations for elliptical orbits. In view of its length and the fact that the erstwhile editor demands copy for the January issue in the next week or so. I intend to include this tutorial along with other operating hints in the January issue and return to the normal column in February

UPS AND DOWNS FOR JULY-AUGUST

Once again thanks to Bob VK3ZBB we have the latest 1 sting of launches and re-entries

THAT TIME OF YEAR AGAIN

Yes, another year is about to pass and I can only but conclude this year's contribution by extending to all readers of this column Season's Greet ngs and a Prosperous Year n 1984 for Satellite Communications

de Colin VK5HI AR



DECEMB	ER	ZL2US	18	9	810
3-5	ARRL 160 metre Contest	ZL3BJ	16	6	480
3	Ross Hull Memorial VHF Contest	ZL1JQ	15	6	450
	START	ZL1VX	12	7	420
10.11		ZL2HS	8	5	200
10-11	ARRL 10 metre Phone Test	ZL3AY	8	3	120
JANUAR	Y	VK3XB	28	10	1400
7	Ross Hull Contest ENDS	VK3K5	27		1215
21-22	White Rose S.N. Contest	VK3JA	24	10	1200
28	French GW Test	VK4AEM	24		1080
27-29	COWW DX 160 metre Test	VK4AIX	23	8	920
ELVED	CONTRA DV 100 mene 1est	VK4CJ	22	8	880
CCHOUAL	nu .	VK4OX	24	7	840
FEBRUAL		VK7CH	18	8	720
4-5	French 40 metre Phone	VK2ADR	18	8	720
11-12	John Moyle National Field Day	VK4BG	18	7	630
11-12	Dutch PACC Test	VK3FC	16	7	560
18-19	ARRL CW DX Test	VK3ZC	15	6	560
25-26	CO WW 180 metre CW	VK3LC	17	8	510
25-26	RSGB 40 metre CW	VK3NV	14	6	420
20.20	nodu 40 metro on	VK5KV	13	8	390
THE	D CONTECT AND NOVICE	VK3XF	12	5	300
	D CONTEST AND NOVICE	VK2HQ	11	- 4	220
CONT	EŞT	YK7JU	11	4	220
Becau	use of the may strikes affecting the	VK4ALW	7	8	210
	of logs to my post box, I have held the	VK3YW	5	4	100
	date of the contests open for a longer	VKSEF	8	3	90

VKSEF

THE "AIRNET INDIA" INTERNATIONAL DX CONTEST - WCY 1983 - CW SECTION

The purpose of the "AIRNET INDIA" International DX Contest 1983 is to enhance the activity of the amateur radio movement in India and offer an opportunity to all world amateurs to establish on a competitive basis contacts between one another and Indian amatours.

The contest will further be an effort to commemorate the WCY 1983 and will be run by the organisers of the "AIRNET INDIA" a voluntary net organisation of Indian and DX amateurs. The team for conducting the contest will comprise of the following VU2AID, VU2BBJ, VU2AIG, VU2RX, VU2NA VU2TN, VU2TS, VU2YZ

PERIOD OF CONTEST OPERAT DN - Contest starts on 3rd December 1983 at 0000 JTC and ends on 4th December 1983 at 2400 LTG

MODES OF OPERATION - Contest participants will confirm operations on the various amateur bands in accordance with the accepted conventions and practices. Only contacts with amateur stations authorised by the administration will be acceptable

CW operators are expected to use convent onal apparatus, in the interest of the hobby ELIGIBL. TY - All licenced CW amateurs of the world

ate engible FREQUENCIES OF OPERATION - All frequencies in the HF band inclusive of the new WARC bands can be

POWER LIM'TS - Power will be imited to those

authorised in each country

ENTRY CLASSIFICATIONS — Category A — Single operator, multi-band Category B — Single operator single band Category C — Multi-operator multi-single band Category C — Multi-operator multiopen to clubs on y Category D - Multi-or single band . . . open to clubs on v hand operator single band .. open to clubs on y Category E — Family groups OM/Y_/XYL teams OPERATIONAL RESTRAINTS - Cross band operation

Split Mode operation, Split frequency operation are not permitted. Multi-operator stations may not work simultaneously on the same band but are permitted to work on different bands at the same time Countries not permitted under the IARU are metable Working on Dispedition frequencies would be discouraged SCORING DETAILS - All contacts on 14 21 and 28 MHz

bands with an Indian station counts two points and on the new WARC bands and 3 5 and 7 MHz bands count as four points. Working stations from pincode zones 2, 7 and 8 w l double the points. above. This is because there are very few active stations in these areas

MULTIPLIERS Number of zones worked in VJ FINAL COUNTS - Number of contact points multiplied

by the multipliers for each band FRATION DETAILS Give R S (T), and age of OPERATION DETAILS operator Club stat ons well give instead of age the figures (02)

SUBMISSION OF LOGISHFETS AND SUMMARIES - AIL contest log sheets summaries will be forwarded to any of the following addresses before 20th

Capt O Dasan, "Airnet Ind a", "CLARA 5-B, Versova

December

(current at the date of writing) concludes with n the very near future VK-ZL QSO PARTY

The VK-Z_QSO Party held on 40 metres on 8th August between 2000 and 2200 hours was just as enjoyable as in the past in spite of much poorer conditions. Those who used both modes CW and SSB - certainly had the advantages as copy was very much easier under the prevailing conditions on the CW end of the band

period to allow for the slow logs to arrive

This means that the results will be delayed

and are expected to be published in the

February ed tron of AR providing this strike

RESULTS Station

Contacts ZL2AB 855

Page 62 - AMATEUR RADIO, December 1983

Cross Roads off Four Bungalows, Andheri West, Rombay 400 056 Ind a

Mr K Asutoshan, C/O TVS um ted, TVS Amateur Badio Club PO Box No 21 Madural 625 016 India Handsome pertificates will be awarded to the

Note A phone contest was held on 19th November by this same organisation with the same rules but unfortunately they arrived too late for printing

3RD ANNUAL - 40-METRE WORLD SSB CHAMPIONSHIP CONTEST SPONSORED BY - 73 Manaz ne Peterhorough New

Hampshire, 03458
CONTEST PER OD — 0000 to 2400 UTC. 7th January.

RIILES - Work as many stations as possible on 40 Metre Phone during the specified times of a lowab operation. The same stat on may be worked GNCE Crossmode contacts will not count Single operator stations may operate a total of 16 hours. All the multi-operator stations may operate the entire 24bour period. Off periods must be noted in your log(s) and on your summary sheet Off per ods are NO LESS THAN THIRTY MINUTES EACH OPERATOR CLASSES — (A) Sing a Operator, Single

Transmitter Phone on v. (B) Multi-Operator Single Transm tter, Phone on y EXCHANGE - Stations within the Continental forty

eight US States and Canada transmit a RS report and State, Province or Territory A I other stations. inc uding Alaska and Hawai transmit RS report and DX Country

POINTS - Five QSO points for contacts with W/VE stations logated within the Continental forty eight JS States and Canada All other contacts score ten points each List points for each contact on your

ogsheet
MILITIPLIFRS — One Multiplier Point is earned for each JS State (forty eight maximum - A District of Columbia contact may be substituted for Maryland my tipiers, each Canadian Province or Territory (thirteen max mum) and BX Country (excluding the

Continental LS and Canada F NAL SCORES — Total QSQ points times Total Multiplier points equals Claimed Score

CONTEST ENTR ES -- Each antry must include a contest og a dupesheet, a contest summary and multiplier CONTEST DEADLINE - Each entry MUST be POST-MARKED no later than 12th February, 1984

DISQUAL FICATIONS - Om ss on of any required entry form operating in excess of legal power, man guisting of contest scores or times to achieve a score advantage or failure to omit duplicate contacts which would reduce the overall score more than two per cent are all grounds for immediate disqualification. Dec sions of the contest

committee are fina AWARDS ARDS Contest awards will be ssued in each operator class in each DX Country represented a minimum of 100 QSOs must be warked to be aliquble for contest awards. CONTEST ADDRESS — 40 Metre Contest, Dennis

Younker NE61 43261 Sixth Street East Lancaster CA 93535

3RD ANNUAL - 75-METRE WORLD SSB CHAMPIONSHIP CONTEST

SPONSORED BY - 73 Magazine. Peterborough. New Hamshire, 03458 CONTEST PER OD 0000 to 2400 JTC. 8th January. 100.4

MISC RULES Work as many stations as possible on 75 Metre Phone during the specified limes of a lowable operation All other rules as per 40 Metre

CONTEST ADDRESS - 75 Metre Contest, Jose A Casti lo N4BAA, 1832 Highland Drive, Amelia Is and, FL 32034

5TH ANNUAL - 160-METRE WORLD ESB CHAMPIONSHIP CONTEST

SPONSORED BY - 73 Manazine, Peterborough, New Hamshire, 03458 CONTEST PERIOD - 0000 14th January, 1984 to 2400

UTC 15th January, 1984 OBJECT To work as many stations as possible on 160 Metre Phone in a maximum of 32 hours allowable contest time. Multi-operator stations may operate the entire 48-hour contest period. Stations may be worked only once

ENTRY CATEGORIES - (1) Single Operator Single Transmitter, Phone only (2) Multi-Operator, Single Transmitter, Phone only

FXCHANGE — Stations within the Continental IIS and Canada transmit RS report and State or Province/ Verritory All others transmit RS report and DX

Country POINTS - Five QSO points for contact with W/VE stations contacted within the Continental forty eight US States and Canada All other contacts earn

MULTIPLIERS - One Multiplier Point will be earned for each of the Continental US States (forty eight maximum ... A Direct of Columbia contact may be substituted for a State of Maryland multiplier). each of the Canadian Provinces/Territories (thirteen maximum), and each DX Country outside the Continental forth eight US States and Canada FINAL SCORES — Total QSD points times Total

Multiplier points equals Claimed Score
CONTEST ENTRIES — Each entry must include loosheel

dupesheet for 100 or more contacts, a contest summary and a multiplier check sheet CONTEST DEADLINE — Each entry must be postmarked no later than 19th February, 1984

DX WINDOW — Stalions are expected to observe the DX Window from 1.825-1.830 MHz as mutually agreed by Too Band operators. Stations in the US and Canada are asked not to transmit in this 5 kHz segment of the band. During the contest all W/VE stations are requested to utilise only frequencies from 1 R08-1 R25 and 1 830-1 900 MHz DISOUALIFICATIONS - Disqualification may result if

contestants omits any required entry form, operates in excess of legal power authorised for his/her niven area manipulates operation times to achieve a score advantage or fails to omit duplicate contacts which reduce the overall score more than two per cent. Decisions of the contest committee are final

AWARDS — Contest awards will be issued in each entry category in each DX Country. A minimum of 100 OSOs must be worked to qualify
CONTEST ADDRESS — 160 Metre Contest, Harr

Arsenault, K1PLR, 603 Powell Avenue, Ene, PA

3RD ANNUAL - RTTY WORLD CHAMPIONSHIP CONTEST

SPONSORED BY - The RTTY Journal and 73 Magazine. CONTEST PERIOD - 0000 to 2400 LITC 25th February 1984

MISC RULES The same station may be worked ONCE ON EACH BAND Crossmode contacts do not count Single operator stations may work 16 hours maximum, while the multi-operator stations may operate the entire 24-hour period. Off times are NO LESS than thirty minutes each and MUST be noted

DPERATOR CLASSES - (A) Single Operator, Single Transmitter (B) Multi Operator, Single Transmitte

ENTRY CATEGORIES (A) Single Band. (B) All Band. 10-80 Metre Stations within the forty eacht Continental US States and Canada must Iransmit RST, and State, Province/Terrilory All others must

transmit RST and consecutive contact number QSO POINTS - Five QSO points for contacts with W/VE stations focated within the Continental US and Canada. Ten QSO points for all other contacts.

MILITARY IFR POINTS - One Muntiplier Point is awarded for each of the forty eight Continental US States. A District of Columb a contact may be substituted for a State of Marviand multiplier) Canadian Provinced Torritor es DX Countr es worked on each band (excluding US and Canada)

FINAL SCORES — Total QSD Points limes Total Multiplier points equals Claimet Score CONTEST ENTRIES - Entries must and ude a SEPARATE leg for EACH BAND, a dupesheet a summary sheet

a multiplier check list and all st of equipment used ENTRY DEADLINE - All entries MuST be POSTMARKED

no later than 15th Apr. I 1984 DISOGALIFICATIONS -- Omission of the required entry forms, operating in excess of egal power,

manipulation scores or times to achieve a score advantage or failure to om! duplicate contacts which would reduce the overall score more than two per cent are all grounds for immediate dispuss fication Decisions of the contest committee are final AWARDS - Contest awards will be ssued is each entry category and operator class in each DX

Country represented Other awards may be issued at the discretion of the awards committee A minimum of 25 QSOs must be worked to be et gible for awards CONTEST ADDRESS - RYTY World Championship

Contest C/O The RTTY Journal, PO Box RY Cardill,

SINGLE OPERATOR: 1 KE7 2.410.500 37 VK2SG 2 VX281 2.405.078 38 DESWICY 36 500 30 VP3WD 3 49.1000 2 012 586 34 248 4 JASGLI 1.612.258 40 VK2BIS 31 592 5 VK2TTY 1 508,220 41 K6WZ

6 GZ1CRL	1,290.040		26.888
7 HJXE	1 119,668	43 DK4EC	25,850
8 JR2CFD	963 132	44 DJ8WCY/P	25.836
9 K4AGC	978,644	45 DL9MBZ	24 036
10 JH2PDS	938,894		20.340
11 DLIVE	807.896	47 DZ1GBF	20 092
12 IB.IRA	620.582	48 OKISPS	17 199
13 VKBHA	613.314	49 JA2VHG	15 798
14 YB2BLI	551.448	50 DK9CK	12.240
15 VK2BQS	483,888	51 TI2DO	12.032
16 WSHEZ	475,690	52 F3L	8.875
17 OKSKJE	400,688	53 JF3PLF	8,444
18 G3HJC	368,580	54 DESPTM	8 120
19 JB6AG	300.315	55 JI3AXU	6.368
20 _A2VFW	285,376	56 _A7ML	4 936
21 JASTX	258.625	57 PY3 T	3.960
22 VE200	237.850	58 PA3BVT	3,864
23 JA110V	183,164	59 DK8DB	3.332
24 SM5FUG	181.856	60 SM6JQK	3.120
		61 DK5KJ	2.884
25 SM7AIA	156 730		
25 JA1BYL	152 765	62 Y03RF	2.838
27 SM7SLU	138,890	63 VK2APQ	2 160
28 W2KHQ	136.410	64 JIEEA	1.584
29 DE2SNL	131,448	65 ×K58Z	1.519
30 DJ40P	107 120	68 SM60EQ	1,188
31 VE7VP	90,936	67 JN1BAX	964
32 VK3BUS	87.480	68 JH3DPB	918

69 DE7EB

70 VK2BLU

71 SP2FF/1

72 VK2AJT

79,060 65,600 62 115 36 VK2E6 MULTI-OPERATOR SECTION. 1 VE3UR 316.030 2 JAZYKA

33 WB4UBD

34 JFZPZH

35 IKSCKI

3 OKSKI 41,310 4 VK2BQK SWL SECTION: 1 OZ-DR-2135 1.096,590

2 E L Ludw g 3 J F Matthews 349.016 4 NI -4483 5 K W. stoer 50,981 6 JA3-30356 40.968 7.3A1-25711 31 280 8 DL H53 1881044 8.034 9 H Ballenberger 3,985 10 JA1-7777

73 Reg VK18R

504

496

90 615

294

AB

Page 63

Christmas Greetings to all



POUNDING BRASS

Marshail Emm, VK5FN 6P0 Box 389, Adela de SA 5001

This month's column is based on a letter received recently from Al Rechner, VKSEK, who has very kindly given permission to use if The etter is self-explanatory, so without further preamble.

Dear Marshail,

A member of the WIA for over thirty years, a thereased amateur for over thereif fives, I have been a keen student of high frequency technique all my file I have been reading your Founding Brass' column in Amateur Radio sange its inequotion some twelve months ago. The column is wall written well resparched and very informative. Often as not, it is the first thing! read. You are to be congratulated on it.

I claim to be very well informed on ischnical matters, and I have been unable to fault you technically, except perhaps for one minor point in the first column (August 1982, p.40). That point is the subject of this letter

You imply that keyed continuous wave transmissions of the ordinary type, that is, the normal CW we hear on the bottom end of the amateur bands should be more properly described as ICW or Interrupted Continuous Waves. This is incorrect Interrupted Continuous Waves are fundamentally different from Keyed Continuous Waves ICW transmissions are those in which the carrier wave is turned on and off at an audio rate, often by mechanical meens. In early days, a simple buzzer was connected in series with the plate supply to the transmitter so that when the key was pressed the buzzer "interrupted" the power supply at an audio rate. That is, the buzzer turned the power on end off at, say, 500 Hz. The result was a Morse signal on air that sounded very like a buzzer, it needed no BFO on the receiver, it had a piercing, reucous note that carried very well through heavy QRM, and was very pleasant to copy. and very easy to copy in the presence of ORM ORN

An our probably be imagined, the transmitted signal ended to be very broad and solatiery and the system fell into disuse mainly for the reason Anthough I can see no technical reason why the signal should be any wide than asy an SSB signal. The system which the system is characteristic percent of I was the night harmonic content that gave the system its characteristic percent ground of the corner, groung a tool with side bands would the corner, groung a tool and the proceeding the today, particularly in the CW bands.

A variation of ICW is still in use loday and can often be heard with marine traffic on the 500 kHz distress fraquency. This variation involves modulating the carrier with a simple, sine wave audio tone of about 500,800 Hz. When keyed, these transmissions can be read without a BFO, and when read with a BFO.

have an unusual "two-tone" sound which is quite easy to copy. Thank you, and congratulations once again

on an excellent column. Best regards, Al Rechner, VKSEK

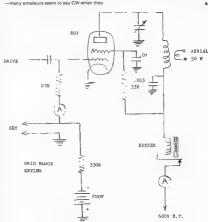
In thanking Al for his letter, I would like hert of all for applicage for the ongranel error. It resulted from my own interpretation of what papeared to be "common knowledge", but Al (Lised more or less interchangeably with MCW for Modulated CW) and the value of the ICW sound in getting through GRM/GRN in Eat, a recent article in an American magazine concerning an audio filtering device suggest-

But if I could get back to the point of what I was saying in that original article, just for the record, we are still being pretty un-technical when we refer to CW as an operating mode —many amaleurs seem to say CW when they

mean Morse code. As an examp e of this, how often have you head a reference to how fast someone can "copy CW"? A purist would perhaps have us call the mode KCW for Keyed Continuous Wave, or perhaps even Keyed Un-Modulated. Un-Interrupted Continuous Wave! Then again. A"A is perfectly adequate and I am far less concerned with what we'ca.

it than how we use it Attached to Alsa etter was a schematic for the PA of an ICW transmitter which is reproduced for its historical interest. But please don't try to build it or 1 you build it on't use it. Apart from its wasteful reach on terms of bandwidth ICW is not a permitted mode for amateurs in this country.

Next month we'll be talking about QRPp operation, and i' include a crount which you can build from read y available parts and use to your heart's content. Till then, keep pounding brass and keep the latters coming?



Power Amplifier Section of a 50 W ICW Transmitter.



Wicen news

Ron Henderson, VK1RH FEDERAL WICEN CO-ORDINATOR 171 Kingsford Sm th Drive Melba ACT 2615

REPORT ON COUNTER DISASTER COMMUNICATIONS STUDY JULY 1983

INTRODUCTION

The Department of Communications and the Natura Disaster Organisation, Depart ment of Defence jointly sponsored a Counter Disaster Communications Study, held at the Australian Counter Disaster College, Macedon, Victoria from 24th to 27th July,

The Study was attended by representatives from DOC, NDO, OTC, Telecom, Australia Post, State disaster contro agencies, the ABC, AUSSAT, the Roya Flying Doctor Service and the WIA. The departments of Transport, Aviation Industry and Commerce. Defence Prime Ministers and Cabinet and Science and Technology were also repre-

As Federal WiCEN Co-ordinator I attended as the WIA representative

STUDY PROGRAMME

The Study opened with a little over a day devoted to briefings by agencies prominent in disaster communications before commencing a series of four seminar topics loosely related to the Study scenario. This was a simultaneous occurrence of a severe earthquake in Adelaide, a trop cal cyc one and storm surge n Cairns and major statewide bushfires in V ctoria

COMMUNICATIONS REQUIREMENTS

The first seminar topic was the production of a list in priority order of counter disaster communications requirements, what could be termed a wish list. This was then developed across the pre-disaster, disaster and post-disaster phases by levels of activity v z Commonwealth, state, local authority and

EXISTING CAPABILITIES The second topic was the preparation of a

summary of Australia's current capabilities. expanded to indicate considered deficiencies in capabilities and proposed solutions. The Study dentified fifteen areas of deficiency as follows · Potential overload of the public switched

- telephone network (STN) and cable systems prone to damage Emergency communications not interfaced
- with the STN · Inability to answer public enquiries · Broadcasting systems vuinerable
- . Inability of counter disaster (CD) groups to intercommunicate by radio (frequency planning deficiencies,
- · Remote and underserviced areas exist Insufficient mobile services exist
- Lack of CD charter for Telecom (including subscriber priorities, and OTC (subscriber priorities and limited capacity).

- · Limited capacity for Defence communications network involvement in CD Insufficient defence strategic and tactical capability
- · Lack of physical diversity
- · CB radio lack of range and mexpert onerators
- · Lack of interactive capability for national (ABC and commercial) radio and TV
- · Lack of availability of aircraft as a communications tool
- · If cost were no object

more HF capacity for interstate operations and direct contact to NDO another Transportable Emergency Broadcasting Station (TEBS) improvement of data links. improved access to satellites provision of video links. more media interface provide discrete auto telex system provide more staff and training

SHORT TERM IMPROVEMENTS The deficiencies of topic two led into topic

three, "short term improvements" (achievable in a five year period). Generally these were low cost and/or management type fixes and were enumerated in the following areas ▶ Telecom

- · Frequency allocations, useage and management
- Licencing arrangements
- Operator training
- · Intra-State/Territory lieison and co-
- Inter-State/Territory/Commonwealth Iserson and co-ordination
- Support from the Australian Defence Force including Defence Communications
- Overseas Telecommunications Broadcasting and other Media Liaison

LONG TERM IMPROVEMENTS The last topic artifressed long term (to year 2000) improvements in CD communications

and concentrated on seven aspects For Satellites. Greater flexibility through mobile ground stations, overcome the convergence factor on other communications agencies, mode compatability with mobile radios and in the long term broadcast

capability to individual households In the Immediate Disaster Area. All communications modes, viz. UHF, VHF, telephone telex, video, FAX, With portable/mobile data systems using intelligent terminals to hold, review and transmit information. Electronic recording for log keeping purposes

Federal/State/Territory Communications Data, telephone, telex and FAX on a dedicated system with a planned backup system

Role of Data Communications An aspect of major advancement introduce system to control of operations, information gathering and distribution

Operator Training Through use of friendly equipment and provision of adequate funds for training experience

Equipment Commonalty By means of user friendly equipment systems translators and clear specifications followed by effective quality assurance and acceptance proce-

Dedicated Backup: Achieved through reserves and acknowledgement of obligation (ie dedication to task) by all agencies. Needs full planning to identify alternatives and define levels of priorities of fall-back options

SHMMARY

Throughout the study amateur radio took a low key role which was guite expected in the light of the full range of available commun cations depicted. However informa discussions with partic pants indicated a consistant respect for the amateur operator and his involvement unfortunately coupled with uncertainty as to his role As a State Emergency Services were represented t s now opportune for State WICEN co-ordinators to follow up with the r SES communications officers their role and involvement in the appropriate State counter disaster communications plans A full report of the Study will be printed and

issued to partic pants and their parent organisations, hence both FE and will have copies as will the various SES officers so interested amaleurs should have access to copies



1983



POLICE CARS OF THE 1990s

Will have their own exterior closedcircuit TV camera with video recording facilities, an internal TV monitor and a direct link with its force's headquarters central computer A specially converted working model of

this type of police car was viewed by senior police officers from Germany, Denmark, USA Britain and two officials from China at a recent International Police Video Symposium in south east England

This car, a traffic control duties Ford, was converted at a cost of \$30,000 from Information Technology from Britain, 23 September

AMATEUR RADIO, December 1983 Page 65



Bruce Hannaford, VK5XI 57 Haydown Road, Elizabeth Grove SA 5112



FREQUENCY SHIFT KEYING

As pointed out in the very first RTTY article I wrote in this series a HF bands FSK RTTY transmitter can be a very simple device indeed. There are many advantages in using DC switched FSK instead of the more common 'Audio generated" FSK as obtained by feeding audio tones into a SSB type transmitter For 'DC switched' FSK there is no need to use any filters, mixers or audio stages etc. The transmitter could be as simple as a crystal oscillator fed into an antenna. In fact I have tried feeding the crystal oscillator stage of one of my transmitters straight into the antenna and did get good results for the low power used. Just think of the delightful simplicity of such a transmitter. I used a valve crystal oscillator, only one RF tuned circuit in the whole transmitter and only a dozen or so components involved. This sort of thing could rev ve home brew no once sosin

I note when you talk about such a set up. most reply * But it is crystal controlled and you need to use a VFO these days" Well a VFO controlled transmission is certainly useful and perhaps almost essential for SSB work but not necessarily so for RTTY Most RTTY is confined to very small portions of our bands so a few well chosen crystals will often suffice for plenty of enjoyable contacts. Because exceptionally high stability is required for RTTY, home brewing of VFOs is often not successful and the easy way out is to use crystal contro Of course the crystal oscillator should preferably be followed by an amplifier stage or stages to get more power output and better isolation between the enterna and the crystal circuit. Also the crystal oscillator stage will normally need to be fed from a

regulated power supply especially if the RF output is to be higher in frequency than the 7 MHz band

Crystal oscillator circuits are common place but the RTTY keying methods applied to them are not so well known so I will give at circuit I often use and find very satisfactory. As amateur convention has it that the RF frequency for Mark must be the higher frequency of the RF pair and that the Space frequency must be the lowest one, switching a small capacitor across the crystal for space will establish "normal" (right side up) RTTY With the circuit shown the closed circuit (Mark) condition switches OUT the capacity allowing the oscillations to be at the highest frequency this giving "normal" RTTY operalion. This circuit uses diode switching however for 45 45 Baud RTTY mechanical relays are often quite satisfactory and could be used if desired. We are presupposing that the RTTY keyboard device used to key the transmitter has a switching output and is not limited to audio tones output. All communications computers I have seen do have such an oulput and mechanical systems can easily be arranged to give switching output

Looking at the circuit the main points of interest are the switching action of the diode and the effects of capacitors C1 and C2. The diode switching is accomplished by the RTTY keyboard opening and closing the RTTY input connection. When the input circuit is closed the lower end of the diode (it's Anode) is DC earthed through the RF choke and the low value R4 resistor, about +75 volts from R1 and R2 is applied to the top or cathode and This voltage reverse biases the diode making it non conducting. When the input circuit is open the lower end of the drode is fed from R3. which is connected to +150 volts, the diode now conducts as +150 volts is 75 volts more positive than the +75 volts at the junction of R1 and R2 which is connected to the cathode end of the diode

When the diode is non-conducting C1 is in effect disconnected and has little or no effect on the crystal frequency but when the diode conducts C1 is connected and will pull the crystal to a slightly lower frequency. The RF voltages present on each side of their ode are confined to the RF switching circuit path by the RF choke and by R1, R2 C3 is a DC blocking capacitor and the ferrite bead is used to prevent VHF parasitics being gener ated With C2 set to zero capacity the amount of frequency shift will be determined by the setting of C1. The maximum possible value of C1 should be great enough to give sufficient shift on the lowest frequency band use and this with the most reluctant crystal. It will then be found that on bands such as 28 MHz, even at the minimum sett no of C1, more shift than desired will often occur If C2 is set at a fairly high capacity the switching of C1 will have very little effect and a small shift can then be obtained Of course the total combined capacity of C1 and C2 must not be too great or the crystal will not oscillate, but with sensible settings 170 Hz shift can be obtained on all bands Summing it up. On lower frequency bands C2 is set to zero and C1 is set to a rather large capacity to get enough shift. On high frequency bands C2 is set to a rather large capacity and C1 to zero capacity

Some crystals are more active than others and these will oscillate with large amounts of capacity across them, also some crystais require more capacity than others to shift a given number of Hz. It largely depends on the quality of the crystal used and the type of cut made. Two crysta's of identical frequency may give different shifts with the same value of C1 in use. However if you were to order a batch of several crystals of similar frequency most likely all of them would shift in much the same way I find it is usually easy to get 170 Hz shift on all HF bands but sometimes difficult on 160 metres depending on the cut of the crysta.

I prefer to use the old style large crystals in holders that can be unscrewed rather than modern miniture types using plated crystals in sealed holders. My preferance is because the larger crystals can handle more RF Power and their frequency can be changed by grinding them on a piece of glass coated with an abrasive paste If you want tips about crystal grinding ask old t mers, as crysta grinding was common place a few decades ago and most old timers have had a go at it Often old style crystals can be bought at disposals shops for about \$1 each Usually amateur band frequencies will have been picked up by 'early birds' but often crystals a little lower than an amateur band can be obtained and then ground to the desired frequency in the band

Of course the same type of keying circuits can be used across a VFO tuned circuit or part thereof and it will be quite easy to get enough shift. The same basic circuit can also be used with solid state crystal oscillators except different resistor values to suit the lower DC supply voltages will be needed. I have found that most VFOs can be RTTY keyed by a slight

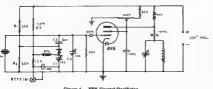


Figure 1 - FSK Crystal Oscillator.

change of supply voits. In one soud state VFO i tried 1 of a volt change in the 9 volts regulated supply gave 170 Hz shift. Of course the voltage changes need to take place very rap dly and it the RF filtering capacitors in the vo tage supply I ne are large their value may need to be reduced. If you wish to build a VFO controlled FSK transmitter an easy way to do this is to buy an External VFO unit intended for a SSB type transceiver. This unit is then heterodyned with a few crystais to cover the desired bands. An easy way to check your shift stoprint your own outgoing signals and adjust the shift to give proper mark and space ndications. Well I trust the foregoing has encouraged at least a few to build their own RTTY transmitters as it is really quite simple especially with crystal control

Last month I gave some details of Code Readers and Converters. Well I have spent quite a bit of time using a MBA-RO Code Reader on air and am favourably impressed by it For those who obtain one of these units! would like to stress the importance of carefully studying the handbook instructions before attempting to act the unit as soften way study and a studying the handbook instructions before to read and I note only one error on page 5 where, for 14 MHz amaleur band RTTM, you are to lid to be sure to set the receiver switch to be STTM and I not to the same to set the secretary switch to RTTM and in most cases it would be USB for commercial RTTM who will have like of to see a normal reventer switch on the unit to save returning using the other suddand, but for returning using the other suddand, but for the time LSB will give correct corp.

Operating the unit I found it easier to read the one line moving display if it were some distance away and not just under my noise the threshold control is rather critical but a bit of practice tuning in strong signals soon teaches you how to use the control The unit operated well on CW. RTTY and ASCII It

should be a boon to SWLs, init user watchers, or portate were and for monitoring ones outgoing treasures and Mean-trick of the control of the

Summing it all up the MBA-RO will not equal the convenence of a RTTY unit with a VDU page display but on performance value per dollar spent very good value indeed.

73 Irom Bruce VK5XI

INTRUDER WATCH



FEDERAL INTRUDER WATCH
CO-ORDINATOR
33 Samerville Road, Hornsby Heights, NSW 2077
nember in the Intruder Walch
onth a random check of the
International Free

You may remember in the Intruder Walch Column last month a random check of the 46-metre band, in the sinateur segment, 70-de 46-metre band, in the sinateur segment, 70-de 56-metre band, 70-de 76-de
In other words, our primary segment of the 40-metre band is effectively reduced by half Most of these intruders are based in China or A bania. I wery considerate of them — if would be a great state of affairs. I all the radio frequency spectrum users wandered all over the bands at will, as these people do hopefully in January 1984, at Geneva, the WARC for broadcasters may see some changes We certainly hope so

Now for a ittle information of which, I think, most amateur operators will not be aware, and this one really bears thinking about, hopefully, also, it will drive home the point that every country involved in amateur radio MUST HAVE a working Intruder Watch.

"THE SIXTY-DAY RULE"

The 60-day Rule' is part of the International Telecommunications Union (ITU) radio regulations. Under the old numbering of the regulations, the rule was No 515 and 526.

This rule allows ANY administration to assign ANY of its stations to ANY frequency, and so long as no reports of harmful inter ference are received by the station or the International Frequency Registration Board (IFRB), of the ITU within the 60-day period. the administration can insist on registration of its useage of the frequency If you think about it, you can see that ALL amateur frequencies are in leopardy from this rule. It has been used in the past, and no doubt will be used in the future. So you can see that any new intruders heard must be reported quickly. or else we may find that we're stuck with them Very shortly in the new year, I will make available some statistics on the number and type of reports processed by the Intruder Watch for the period 1st January, 1983 to 31st December 1983

Should make some interesting reading, and will be rather alariming for those who are not familiar with intruder activity. Very best wishes for Christimas and the new year to all, and many thanks especially to those who have given strong support to the Intruder Watch in 1980.

THE RADIO REPAIR SHOP

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ANDY VK3DPJ

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NOVEMBER'S BEST PHOTOGRAPHS

The judges at AGFA-GAVAERT Quadricolor and Waverley Offset Printing Group all select the front cover photograph of the November

assue
This photograph will now be considered for
the Optima camera prize at the end of the
competition in June 1984

NATIONAL EMC ADVISORY SERVICE



"THE LIGHT AT THE END OF THE YEAR"

The Bin-s dead — long live the Act By the lime you are sitting down to your Christmas furkey we should have a new Radiocommunications Act

The EMC aspects of the Act will we trust on a many day and many que to see some upin at the end of the most difficult opinities and practical EMC funnel. The power contained in the Act will pending the drailing opinities and practical EMC survey to do other policy and the properties of the policy when they were appointed. The Department of Communic act on six of other policy and in the properties of the p

The new Act will advantage the Amaleur Service in most areas because the Amaleur Service is a very responsible and a very technically qualified user of the radio frequency spectrum. The Amaleur Service is

very conscious of the need for effective EMC ndeed the Amateur Service has been promoting the social "political and technical banel Is of effect ve EMC for many years and is well qual rided in both 10th theoretical and practical angencies of EMC technology. Nevertheless membars of the Amateur

Radio Service should not forget that the Department of Communications does have the power for close down an Amateur Station The Department of Communications is the government appointed control body for the super's on of the electromagnetic spectrum in this role they are perm telo to close down any communications or broadcast service and this includes the Amateur Service.

Members of the Amsteur Radio Service as most like y to be requested or directed to restrict hours of operation or close down their storn in relation to a compliant of interference However in these enrightened days of modern communications technology officers of the Department are well aware of problems — they do not go out of their inealy to prostout overthee members of the Amsteur Service Amsteur is should be seen that the Department of the Amsteur Service of the Control of the Service of the Control of the Service of the Se

ments Radio Inspectors outer other work of conference specific operation of care pressure when dealing with the very complex and diverse mail-red inhierbence. The situation is compounded by the many and varied problems areconstreed when dealing with human behave our counsed with the social political behavior of communications may when investigating a case of other problems of the dealing with the problems of the dealing of

smooth progress of the investigation, to request the amateur station to cease operations for a specified period of time, even though the amateur station equipment is not at fault Under these conditions, members of the Amateur Service should, in the interest of good public relations, co-operate with the Department's officers in this respect.

However members of the Amateur Service are entitled to be given reasons for any restrictions imposed by officers of the Department of Communications

ment of Communications
Members of the Amateur Radio Service are
advised to contact the National EMC Advisory
Service if they consider any action by the
Department of Communications in respect of
EMC. is harsh or unjustified

EMC is harsh or unjustified.
The risky be a good time of the year to give
the shack a "bit of a check-over" — perhaps
the shack a "bit of a check-over" — perhaps
equipment racks, shorten the accessively
long cables, check the equipment earth
bonding and check antennas for loose
corroded connections. A compliant of
interference can arrive at any time — the naw
neighbour with this unfiltered equipment, the
Christinas present with "rabble ears", or the
Christinas present with "rabble ears", or the

robot with the disc memory As most of us know only too well the majority of interference complaints are not caused by problems in the transmitting equipment but by deficiencies in the receiving equipment. However, it is most important to keep a close eye on those unwanted harmonics, which not only help to cause interference but also become a drain on your hard earned power. Transmitter alignment should be carried out with the aid of a spectrum analyser in order to ensure that all harmonic levels are as low as possible (or within manufacturers specifications) before the signal is fed to the low pass fifter arrangement Use of a low pass filter alone does not make any provision for dissipation of the unwanted harmonic energy produced by the transmitter Since there is a high degree of impedance mismatch between the coaxial cable and the input of the low pass filter at frequencies above the cut-off frequency, there is a bigh VSWR on the feed cable between the trans mitter and the filter at harmonic frequencies Also since there is usually no provision for external dissipation of this energy and since harmonic energy is continually being produced dissipation occurs only in the final amplifier stage and in the cable. Consequently there is a likelihood of harmonic energy radiation from the transmitter itself, as well as possible harmonic energy radiation from the cable because of leakage, faulty connectors

and on forth

An obvious solution is to use a high-pass filter having a 50 phm resistive load connected me shared with the feed line, a by means of a casual "connector" Such a high-pass filter should be designed to have the same cut-off of the same cut-off will be plot impedance at frequencies below cut-off will be plot.

The result will be that harmonic energy is dissipated in the 50 ohm load connected to the output term has of the high-pass filter The shunt effect of the high-pass filter will be negligible at low frequencies because of the high input impedence of the filter be ow cutoff There will be no high currents and voltages at harmonic frequencies since the SWR at the harmonic frequencies will be close to unity. Harmonic energy will be dissipated putside of the transmitter chass a and not all in the fina amplifier so the fina stage will run cooler Of course, all this can lead to less TVI This concept of compi mentary filters has been used for many years in hi-fi instaliations for separation of high and low frequencies

Interference problems quite offen, involve third parties and for this reason members of the Amateur Radio Service should, at all times be very conscious of the acrual legal and "political" implications of entering another persons properly for the purpose of making adjustments, modifications or just of making adjustments, modifications or just or compliant.

The National EMC Adv sory Serv ca warrs against any attempt to make a dustments or modifications to any other persons a property or equipment in-uses you have a post tive, preferably written statement from its sperson groung you full authority to make adjustments and/or mod fical one etc. The agreement should cellarly state then to responsiblely for rest on any member of the Amateur Radio Service.

Throughout he year there has been many standard as well as number of strange EMC strange EMC standard several
the problem to a swimming pool automatic chlorinator about 250 yds from my station. The manufacturers replaced the affending unit with a later model solid-state unit."

From Victoria a report on masthead amplifiers and associated installations "A well known TV antenna organisation recommends that a MHA not be mounted within the structure of phased array TV antennas. It seems that the amplifier may radiate sufficient signal from its plastic box to be picked-up by the antenna and re-amplified, thereby causing oscillation at 'whatever frequency Another problem appears to be the constant use of poor quality coaxial cable. Many of these cables, unlike communications quality, have loose open weave braid. Signal leakage from these type of cables can get back into the MHA input This is more of a problem where distribution amplifiers are used with high gain and the input and output cables are in the same duct alongside each other. The very high gain of MHA's is not usually required unless a very long output lead is required and/or a number of splitters are needed About 15-20 dB is more than adequate in most

Again from VKS Is a report on how to transm to computer cata on your VHF phone signal. Set yourself up next to a big commere at computer and you could find that the AC supply is modulating your transmitter with information which you could well do without.

Fina ty, from VK who was chasing a TVI grob em on and off, for months. Then, for unconnected reasons, VK ...dec ded to give the shack a' bit of a once over 'The clean-up revealed crossed antenna feed lines it was a bit hard to decide how long the shack had been provided with high frequency heating. The moral s — dentity your feed fines at both ends

In conclusion, returning to the Radiocommunications Act, I would like to remind all Australian amateurs that the CASPAR (Communications Act Special Planning And Response) Committee with again be coordinating and correlating the Institute's response in connection with the Requistions and Standards relating to the new Act. One cannot emphasise too much the importance of good and fair regulations and standards The Amateur Radio Service will be affected by these, so it is most important that we produce. as far as possible, a truly united effort in the presentation of our case material. The drafting of Standards and Requiations will be a most complex, technical and political operation. and in this respect the CASPAR Committee wil need as much assistance as possible from all Austral an amateurs in order to try to ensure that the Amateur Service procures the best possible deal

Any material, suggestions, comments etc in relation to any aspect of the new Act should be sent to — The CASPAR Co-ordinator, PO Box 300, Caulfield South, Vic 3162

Finally, my thanks to all those who have assisted with the EMC operation throughout the year. Best Wishes for Christmas and the New Year from YK3QQ.



Mike Bazeley, VK6HD FEDERAL AWARDS MANAGER 8 James Road, Kalamunda, WA 6076

Most of my time, whilst being Federal Awards Manager, seems to be taken up with DXCC matters. There is an obvious interest in this award and updating country totals. Checking through some of these country totals I have come across several errors These errors, in the main, are caused by deletions not being taken off, or countries claimed which subsequently were not accepted for DXCC purposes. The present DXCC list contains 315 current countries and there is a deleted list of fifty one. The updated DXCC list can be found on pages 148 to 151 in the 1983/84 Australian Callbook Those of you who are interested in the DXCC listings could you please check your scores against the current list and advise me of any errors, many thanks. Further copies of the DXCC list may be obtained from me - don't forget the SASE please

Two possible additions to the DXCC lists may be KL7 Pribolol Islands and KH5 Jarro. The rumourmongers are betting a fifty-fifty chance on the former and little chance on the latter. Hope all that needed them made HK0 Malpelo and BY on SSB.

PIONEER SHIRE CENTENARY AWARD
The address for claims for this award is Boy

1065, Mackey, Qld 4740. GOLD COAST AMATEUR RADIO

SOCIETY

The new conditions for the two awards sponsored by the above Society are as follows

THE GOLD COAST AWARD requires five points. Two points for a citub station VK4WIG or WK4VGC (one only to count) and one point for any club member. Applications to be sent to: The Awards Manager, PO Box 588, Southport, Old 4215 and must show Time, Date, Callisgri, Name, Location, Frequency.

Mode, and include \$1.00 to cover postage. 100 REPEATER AWARD? requires one hundred contacts to be made strough the Gold Coast Repeater WKARG (VHF or UHF). The same station must not be worked under severe days. Applications to be sent to. The Awards Manager, as above, and must show Time, Date, Callsign, Name, Location, Frequency (VHF or UHF), and include \$1.00 to cover postage.

To assist stations to obtain the Gold Coast Award the Society will be starting a new club net on 21.175 MHz ± at 1500 UTC every Sunday afternoon commencing in November. Well once again another year has gone by, may I take this opportunity to wish all a vivil year of the supportunity to wish all a well Mike VKGHD.

ROTTES &

The statistics for the August exams were received recently. Readers will be pleased to know that the pass rates recovered somewhat from the very low rates in February this year. The range this time extends from 24 4%; v(X6) to 48 8%; v(X6) with an overall figure of 33 % compared to the February 1 gure of 20 9% corneral.

Five separate papers were used, some of them a repeat of previous papers, and some with a certain amount of new material added I have not yet seen the papers, so cannot cricitize but I have not had much adverse comments from candidates.

Candidate numbers for this exam were very close to those for August 1982, but in all states except VK6 pass rates were higher this time –VKs 2 and 3 recorded their highest pass rates of the past three years.

However these top rates of 38.9% and 42.6% respectively are not as high as the top rate for the states with smaller numbers.

The pass rates for the 10 WPM CW exams.

The pass rates for the 10 WPM CW exams however are, mostly significantly lower than they were in February, or even August 1982

Perhaps these results illustrate the variability that can occur. It is not likely that any particular Morse exam will be much harder than any other, but over the three years for which I have figures, 10 WPM pass rates by

I have recently received a conv of the Instruction Kit prepared by the VK2 Division Education Service It includes the new publication 'Novice Electronics' which together with the earlier booklet Into Electronics' provides a complete Theory course. This appears to provide a useful addition to the available material for students or instructors. It is simply written with clear diagrams and, in general, explanations that are easy to follow. These two books together with the '100 Basic Electronic Projects' from the same source would provide an interesting and affective course for schools, ooking for some application and extension of their electronic in te

The k1 a so includes a Morse code instruction book and tape. While I do not personally advocate the learning procedure recommended in the course. I can see the whole kit is a very useful package for the student trying to strugg a through without benefit of classes or assistance.

To those of you who may want cop as of CW exam tapes please get them to me as early in December as possible, as my copying fac-life is tend to be unavailable over the school ho idays Sample exam papers are est officult I would like to thank all those who anclose return postage or contributions with their requests for tapes or papers

Best wishes to you all for the forthcoming holiday season and the New Year May the bands you want to use be open and your equipment free of problems.

73 Brenda VK3KT AR

🗱 CLUB

Code

CORNER



REDCLIFFE RADIO CLUB

The Redcliffe Radio Club's demonstration stand at the Caboolture Sunshine Festival attracted a great deal of interest. Andrew Hite of Caboolture and Steve Howarth of Redcliffe, (from left) looked over one of the many of ferent pieces of equipment



The VK CWORP Club has been dishanded

The VK CWQNP Club has been dispanded. There are moves to form a new CWQRP Club and anyone interested, including former members please contact:—Mr Len O'Donnel, VK5ZF 331 upgs Street, Richmond, SA 5033.

VICTORIAN MIDLAND ZONE The December meeting will be the

The December meeting will be the Christmas breakup at the home of the president Don VK3XBL at Mandurang Sth on Friday 18th from 8 PM onwards BYO barbecue or cold salads etc if weather not suitable for barbecue All welcome

The Annual Midland Zone Convention will be held on Sunday 19th February at the usual venue at Stratthieldsaye near Bendeus usil details will appear in the February issue of AR but please note this date. Catering etc. will be as 1983.

Mergeret Lott VK3DML HONORARY SECRETARY

AR

AHARTS

This year, being World Communications Year, the Australian National Amateur Radio To oprinter Society made a special effort with their Annual RTTY Contest. The VK/ZL WCY RTTY Contest, and studying the logs received. it would appear that their efforts were well rewarded and the results most encouraging We were fortunate to have the backing of the International Telecommunications Union, and were elated when the Secretary General Mr R E Butter offered to donate the trophies for the winners of each section. It was later announced. Mr Butler would be attending the IREE Convention in Sydney, and was particularly anxious to actually present the trophies to the Australian winners, in person, while in Sydney The committee of ANARTS organised a dinner at one of the leading hotels to meet and entertain Mr Butler, during which he presented trophies to the Australian Single Operator and Multi-Operator winners. He also presen-



Mr Butter presenting trophy to Bruce VK2RT.



Members present at the dinner. L to R Peter VK2ABH, Pierce VK2APQ and Mirek Joschim — technical consultant to ministry of communications in Czechoslavskia.



Mr Butler delivering his speech. Syd VK2SG, President ANARTS is to his left.

led trophies to representatives of the world single operator and world multi-operator winners. To remind Mr Butter of his meeting with ANARTS, he was presented with a book of Australian scenes.

Following is a brief history of the ANARTS which was formed in 1978 by gild WCREG and Syd WCREG in concurage the use of RTTY and to assist flower interested in the mode satting up their gear Yako to further set in the mode satting up their gear Yako to further set in the satting up their gear Yako to further set in the satting up their gear Yako to further set in the satting to the satting to the satting the sa

members every two months. A news hinadoust in RTTY was also commenced at this time. using our official callsign VK2TTY This broadcast is now transmitted every Sunday at 0030 UTC on 7,045, 14,090, 14,095 and 146 675 MHz. The 14 090 transmission is beamed porth and the 14 095 transmission is beamed west. This broadcast is repeated at 0930 UTC on 3.545 and 146.675 MHz. These news broadcasts contain news of interest to the RTTY fraternity from all over the world plus DX notes for CW SSB and RTTY We are one of the very few stations throughout the world who broadcast RTTY DX news, and as such have a big following. The broadcasts are regularly received throughout Australia and South Pacific Islands Also, news contained in these broadcasts is regularly used during the week by stations in other states Syd Molen, VK2SG

PRESIDENT

MOUNT ANAKIE REPEATER

The Geelong Amateur Radio Club, who has the responsibility for the operation and maintenance of the Mt Anake Repeater VK3RGL, is presently conducting a fund raising effort due to the necessity to rebuild and relocate the Repeater to another site on Mt Anakie.

As a mark of our appreciation this club has produced a certificate, which will be sent to all amateurs and SWLs who assist us with a donation.

Barry Abley VK3YXK





WIN THIS NOISE BRIDGE

Details in January Amateur Radio.

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P.O. BOX 1066. PARRAMATTA, NSW 2150

AMATEUR RADIO, December 1983 - Page 71



K2 MINI

Jeff Pages, VK2BYY VK2 MINI BULLETIN EDITOR PO Box 1066, Parramatta, NSW 2150

NOTICE OF MEETING The Annual General Meeting of the Wireless

Institute of Australia, New South Wales Division will be held at 2 PM on Saturday, 31st March 1984

Nominations for election to Gouncil and agenda items for this meeting should be directed to The Secretary, PO Box 1066, Parramatta, NSW, 2150 and must reach the Divisional Office no later than Wednesday. 29th February, 1984 Nomination forms may be obtained from the office, either by calling, writing or phoning (02, 689 2417

Any ordinary, is full, member of the WIA NSW Division may stand for election to the Divisional Council, Would members please note that no business may be discussed or voted on at the AGM unless all members receive notice of such business (see Article 31, Please ensure that any motions you wish discussed reach the office by 29th February 1984

(sod) David Watters, VK2AYO HONORARY SECRETARY WIA NSW DIVISION

COUNCIL REPORT

Divisional Counc met at Amateur Radio House on 14th October 1983 Fourteen new applications for membership were accepted. Council reso ved to adopt the recommendations of Federal Executive on the proposed Radio Communications Bill, and congratulate Michael Owen in particular for his efforts on our behalf

Council received three nominations for the Dick Smith Educator of the Year Award After a secret ballot amongst the councillors Keith Howard, VK2AKX was given the award, which was presented at last month's Conference of Clubs

Council decided to nominate Dick Smith, VK2DIK for the Ron Wilkinson Achievement Award for his outstanding solo around the world flight using and promoting the Amateur Radio Service in the countries he flew over This Federal Award is made in honour of the late Ron Wilkinson, VK3AKC and is given for special achievement in any facet of amateur radio by any amateur

REPEATER INTERFERENCE

Last month's report on interference to the Dural repeater by a new Telecom paging transmitter has a sequel, and it's good news Shortly after fast month's column was written. Telecom advised that, following representations on our behalf by the Department of Communications, they had fitted filters to the paging transmitter. As a result the interference to the repeater has been completely eliminated Council expresses its appreciation on behalf of all users of this service for the efforts made by the DOC and Telecom officers, particularly as the transmitter concerned was operating well within specifications and Telecom were under no legal obligation to install the filters.

DIVISIONAL OFFICE

Members are reminded that Bankcard is now accepted for personal mail or phone purchases from the Divisional Office. If purchasing by mail or phone please give your name, Bankcard number and address (not a post office box) Note that or y payments to the Division may be made by Bankcard, this does NOT include membership renewal, which is paid directly to Federal

The Divisional Office is open each week day between 11 AM and 2 PM, and in add t on each Wednesday night between 7 PM and 9 PM and on the FIRST Saturday of the month between 11 AM and 2 PM. The Saturday openings are for a trial period to establish whether or not a demand exists for this service

The Office stocks a wide range of publications of interest to the amateur. Send an SAE for a current price list. Membership badges. metal car badges, car stickers and blank OSL cards featuring the WIA emblem are also available to members

The Office will be closed over the Chr stmas period, but at the time of writing the exect dates are not yet known. Listen to proadcasts

On behalf of Council I wish all members and their families a happy and healthy Christmas and New Year 73 from Jelf VK2BYY

AH



VIEFEIGHTH WAVE

A few months ago I commented that we had heard rumblings of discontent from VK8 and other sources. Well, although we are doing our best to solve any problems as they occur. and in general improve the lines of communication between divisional council and our far flung members it did occur to us that perhaps now would be a good time to look at the possibilities of VK8 becoming an autonomous divis on I made discreet enquiries to FE as to how one went about it. and Ken Westerman VK5AGW our Membership Secretary, made discreet inquines of some of the members in Alice Springs and Darwin, whilst he was not day no up there in September The general impression he received was that they were in favour. however we real sed that this was only a very small representation of the total number of VK8s so, on his return to VK5 a questionnaire was sent to all VK8s asking for their opinions.

At the time of writing we are awaiting the results of this, and it may be well into the new year before I can report on the results. It was

made clear in the questionnaire that there was no quarantee of success even if the results were favourable. Although there are 187 licenced amateurs in VK8, only about 50 of these are WIA members. It may be that FE and the other divisions (all of whom must agree to the proposal) will consider that 50 members is not enough to form a division, and that they will have to recruit more members before it can be considered. At this stage there are a great number of hypothetical 'ifs and buts' and nothing will happen 'overnight' in a lighter vein there is of course the possibility that VKS may loose the RD Trophy without the VK8s to help ust

Whilst Ken VK5AGW was in VK8 he made the tourist pilgrimage to the top of Ayers Rock, complete with 2 metre hand-held. Unfortunately he didn't make any contacts, so he won't have to worry about having a special QSL card printed^a

Once again we are advertising a 'Position Vacant' This time it is for a new Intruder Watch Co-ordinator Colin Ralph, VK5KCR, who took over the position some 18 months Jennifer Warrington, VK5ANW GPO Box 1234 Adelaide SA 5001

ago, has had to relinguish it due to personal commitments. We thank you, Colin, for your efforts, and hope that someone out there will also see the need to keep our bands free of pirates If you would like to he'p please contact a council member as soon as possible

DIARY DATES

Tuesday 6th December Christmas Social - Thebarton Assembly Rooms with quest speaker - Wally Walkins VK2DEW, talking on China. Bring your partner and a plate of

24th January Check December's Journal and Broadcasts for details

Membership Subscriptions for 1984 are now due.

Please pay promptly for continuation of your membership!

Page 72 AMATEUR RABIO. December 1983



Bud Pounsett, VK4QY Box 638 GPD, Brisbane Old 4001

These pictures were taken at the sixth North Queensland Radio Convention held at the James Cook University, Townsville 23rd-25th September, 1983.



WIAQ President, Guy, VK4ZXZ bringing best wishes for a successful sixth North Queensland Radio Convention.



A small group of the crowd during the opening ceremony.







Hidden transmitter hunt prize to John, VK4NIE/YLQ, "The Best Snifter in North Queensland".



floral art demonstration basket for 100% attendances at North Queensland Conventions.

Congratulations to Evelyn, VK4EQ, number

24 Merit Award, presented by Guy, VK4ZXZ, President of the Queensland Division. Rogert, VK4CD, left, presenting prizes to fox hunt winners, Bill, VK4XZ and Terry, VK4ATY.

73. Bud VK4QY

XX.

Seasons Greetings to all



LETTERS TO MOMMAR



JUBILEE ISSUE

Your copy of the Golden Jub ee issue 1933-1983 Amateur Rad o was a real credit to the ed tor and the picture of the OM amateur radio operater just fitted the meaning of what the Golden Jubilee is all about May say keep up the good work you are doing a marvellous job. Thanking you once again. Yours faithfully

H C Harmer 14 Scett Street Sefton Park, 5083

Mackay, 4740

AR

LETTER OF THANKS

At our last meeting it was resolved that a special latter of thanks he sent to you expressing our praise for recent issues of Amateur Rad o but, in part cular

for the Go den Jub lee Issue t must be difficult to maintain such high standard but you and your team managed to give it that extra lift — a su table celebrat on of lifty years of service

> Best 73 es GD Charles Ivin, VK48PI Secretary Mackey Amateur Radio Clad PQ Box 106

ANTARCTIC STATION

I have been selected as a member of the 1984 Antarctic Research Excedition to Mawson station. I have ust been granted a licence to operate amateur gear at the base (VKOGL) and would I ke to advise other amaleurs that will be striving to make many contacts n the period January '84 - February '85 Here in Australia I am known as VK3YTU and have

never operated HF before am very excited about the potential for developing my skill and techniques as an amateur, not to mention the joy of being able to speak with my fe low Austral ans back home

I am an Electronic Engineer and will be making a detailed study of the ionosphere with the aid of devices such as an ignospode righters, magnetometers etc. Final y, congratulations on an excellent magazine

> Brant W Lamont, VK3YTU facon to be VKOSLI lenospheric Prediction Service P0 Bax 702 Darlinghurst, NSW 2010

BOUGUETS

More power to them!

after their callsigns

Bouquets to Tom Ladler VK5TL and Marshall Emm, VK5FN for their heigful hints on how to send and receive CW

Les Cullen, VK2WU

PO Bex 31 Winnisian, NSW 2777

Yours faithfull

AB

NOVICE OPERATORS I request everyone to re-read the article written by Rex Black, VK2YA on p 75 of October issue of

Amateur Radio where he submits a few quite valid grounds for the CW novices to be given a portion of the 7 MHz band. They could be distinguished by a IC.

Enough havoc has been caused in the offices of the DOC, the VK and Foreign Call Books with amateurs upgrading from novice to K to full call in a

matter of six months or so This letter is to refresh the memories of the WIA council members who held office for the war 1980/R1 I sent a letter to each divisional council containing many extracts from my (VKSNLC) Novice

Notes that had been written in the VKS Journals It stressed the need for the skilled Navice CW operators being allowed to operate down to 21 and With the proposed extension of the 80 metre

band. I request the Novice Allocation be extended up to 3.7 MHz (WARC-use the bands or lose them) With so many nevices in VK2 and VK5 (mysell included) doing slow Morse sessions. I suggest its frequency could also be moved up near the top end of the band, thereby easing local QRM to many stations living to operate in the same locality. Port Eincoln for example

Now in 1983 we find that the Third Party Net requires a given and clear frequency as many operators found we were giving it QRM during the recent RD Contest. If novices could go up to 3.7 MHz this contest would be more enjoyable also

Once again I strongly recommend that the next Federal Convention give some serious considerahon about my proposals. There being NO necessity for any changes to existing novice callsions etc. With the use of my CW programmable CQ caller that will be described in this magazine soon a novice can put out CQ calls on 10 and 15 metres

even when the bands seem dead. By continual use of CW the unskilled Novice Operator would increase his speed up to 10 WPM and bypass the K call On page 26, AR July 1963, in "Representation to the BOC" I quote. "Possible use of Morse on VHF by K licencees" unquote Surely my request would help

to cancel but the above quote also the claim that novices were not expected to upgrade to full call has been proved as false Yours faithful

Lindsay Collins. VKSGZ 12 Park Avenue Resslys Park, 5072

EDITOR'S NOTE:

Matters requiring attention at the Federal Convention should be raised with your division. The division, after consideration may then submit an agenda item for the Federal Convention

APPRECIATION

I wish to show my appreciation to all concerned in the "Golden Jubilee Issue 1933-83", which in my ournion was an excellent job in all aspects, the old biners photos of past days, very good indeed
I enjoyed the article on VK2ZI also Gavin VK3YK

and VK3RV, but the article on VK3BQ by VK3ZS was a masterpiece of research and writing, so once again as one person in VK2, I thank all concerned Cheerus M E Austin, VK2KZ

6 Stanferd Street Kerri Kurri, 2327 800

TAKE A BOW SLOW MORSE OPERATORS Re your very excellent nightly slow Morse practice broadcasts on 80 metres. I would like to convey my sincere thanks to those tireless operators who must have unlimited patience. It was

largely through these broadcasts that I was able to oblain my novice licence

If I may, , would like to make a suggestion, which may or may not have been tried before. This being that a simple means of self correction of random type received would be to send simple text backwards Fn: FDOC FSBOM WOLS

James Armylage, VK2PNM Kelburr Bilnandra, 2827

ZONAL AWARDS

I agree with John Anderson VK57FO in the August issue, that the tragic Sprat y is ands affair should cause us to reconsider the DXCC so-called countries list. No doubt in earlier days, the DXCC certificate was a genu ne proof of one's dedication and operating skills, but in the 1980s, anyone can work a bundred countries over a major contest weekend So what is the BXCC now worth? The difficulty in working all the countries on the 1st now is a political rather than a technical one, as illustrated by the Burma situation

Mr Andersen's suggestion to divide the world into areas by latitude and longitude, gnoring the away with the negrouse of places, ike the St Peter and Paul Rocks being classed as a country However, such a worldwide grid system already nowever, such a worldwide grid system already exists and is in use by the Moonbounde fraternity in is called the Mardenhead Locator System since it evolved in discussions between Region 1 VHF operators in the English town of Maidenhead on 26th and 27th April 1980

In this system, the globe is divided into 324 "fields", each 20° from east to west and 10° from north to south, identified by two letters from AA through RR, the prigins being latitude 90° south and through RK, the origins being latitude 90° south and 180° east. The "numbering" is a ways from south to north and west to east (By the way, VK5ZFO s 20° x 20° grid would only give 152 areas) For VHF use the main fields are further sub-

divided the end result being a locator such as 10 93 WH for my location Obvious y any award based upon this idea would only use the first two letters. So, instead of VK1 through eight only counting as one country there would be ten lie ds to work. For example, Victoria is in QF and the Darwin region of NT is PH. There are already two zonal systems — the CQ Magazine one with forty and ITU one with ninety, so it is a moot point whether anyone would wish to sponsor such a new award However, the Moonbounce folk in the o Lunar Letter Manazine seem to be keen on listing the fields worked by contributors

Yours s ncerely Norman Flich, 63FPK "VHF Rands" Short Wave Manazine

40 Eskdale Gardens Purley Surrey England, 6R2 (EZ

Editor

IN REPLY TO WHO AM I'. OCTOBER 83, AR.

Firstly may I congraturate you on the interest you show in your son's hobby I betthere are many other sons around that wish they had a mother like you Now for your problem

Out of the thousands of peop e that your son can

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talk to around the world you are the only one that he can call Mother So, instead of using OL which I arr sure you're not, may I suggest that you telt them a I that you are very proud y "My Son's MUMP!" a I that you are very proud y "My Keep up the good work Madame

Yours sincere John Clark, VK2AUZ PQ Bax 198 Engadine, 2233 AB

BEREAVEMENT

9M2LN Nara passed away 21st July, 1983 m Kuala Lumpur Malaysia I have been requested by Nara's widow Kultyma, and family, to pass on their sincere

thanks and gratitude to the many Australian and overseas radio amateurs, for their letters, cards, and messages of sympathy, following the sad loss of a fine husband, father, grandfather, and dedicated radio amateur It is impossible to thank everyone individually.

so please accept this as their personal message to each and everyone for their kind thoughts Nara will be sadly missed, but remembered always but all who knew him.

Arthur Pritchard, VK3DPA 45 McCulloch Street, Nunawading 3131 For Kuttyma Narayana and family Kuala Lumpur, Malaysia

VISIT TO UJUNG PANDANG

Recently I visited the city of Ujung Pandang in South Sulawesi, YB8. This visit was arranged by John YBBAX and myself as a contribution to WCY

The cities of Lismore, NSW and Ujung Pandang have a twin city agreement and my XYL and mysel were the first private visitors since the signing of the agreement John took the opportunity of this visit to promote WCY and amateur radio to like authorities in South Sulawesi Two informal evenings were arranged during

which I met about 100 amateurs and was able to tell them about amateur radio in VK land I was surprised to learn that they were riding the crest of the C8 boom and had recruited about 600 students into classes for amateur licences. It is anticipated their amateur population will be approximately 400 by the year 1985.

believe my visit under the banner of WCY had the following effect The authorities of South Surawesi became aware of what WCY was about and support the concept

. They also became very much aware of GRARI (similar to WIA but not a member of the IABU) . Through the concept of WCY the Iwin cities agreement was considerably enhanced as many of the communications problems were overcome

during the visit The Indonesian amateurs were very easy to communicate with and are very courteous and hospitable

The photograph shows myself with a group of Urung Pandang amateurs John YBBAX is third from the left

Gordan Dawse, VKZAGE Lot 2 Bruxner Highw Goonellabah, 2480

AR







SATELLITE EARTH STATION TESTING TO BEGIN SOON AT INNISFAIL

Earth stations are currently being installed at innisfail, on the northern coast of Queensland, as part of a test programme to determine which equipment is best suited for receiving signals from Australia's domestic communications satellites which are to be launched in the second half of 1985

The Minister for Communications, Mr. Michael Duffy, said that thirty eight earth stations, ranging in diameter from 0.9 metres to 2.4 metres would be tested at the Joint Tropical Trials Establishment

A 30-metre mast with a transmitter on the top would be used to simulate signals from a satellite

The earth stations would be linked to a specially built caravan containing monitoring equipment. Results of tests would be fed automatically into a master computer at the Department of Communications' Canberra headquarters for processing and comparison

"Results will be used to help decide technical specifications of the earth stations that and vadual householders will need to buy in order to receive the Homestead and Community Broadcasting Satellite Service (HACBSS). Mr. Dully said.

"This service will enable all Australians to receive one ABC television service and at least two ABC radio services via the domestic salelbles

Earth stations were also being tested at Port Hedland and Alice Springs to ensure they were subjected to the most extreme weather conditions - high rainfall, cyclonic winds, dust and wide fluctuations in temperatures

Mr Duffy said DOC engineers would study the performance of the lest earth stations under these conditions to determine how they would stand up to harsh weather once the satellite system began operating. Most householders and communities who would invest in earth stations lived in conditions of extreme climatic change, so the 'dishes' had to be particularly resilient

The smallest of the earth stations was expected to sell for around \$1000 and should be easy to transport, install and maintain on a 'handyman' basis, Mr Duffy said.

"Trials such as the one to be conducted at Innisfail are essential so that when mass production of earth stations begins manufacturers will have proper system standards to follow

"This is doubly important because Australia is breaking new ground with the HACBSS project -- twelve GHz earth stations have never been used for large scale television and radio recep tion in climatic conditions as varied and extreme as Australia's.'

MULTICULTURAL TELEVISION SERVICE TO TRANSMIT ON UHF

The Multicultural Television Service, currently transmitted in Sydney and Melbourne on both VHF on Channel 0 and UHF Channel 28, would only be shown on UHF Channel 28. from 1st January, 1985, the Minister for Communications Mr Michael Duffy announced on 31st August 1983

Mr Duffy said the announcement was being made at such an early date to ensure that a viewers of multicultural television could familiarise themselves with Ultra High Frequency (UHF) reception and equipment by the time Channel 0 was phased out

"When the decision was taken to establish the Multicultural Television Service few people in Sydney and Melbourne had UHF receivers and antennas the Minister said "That situation is changing quite rapidly and loday most receivers produced have both VHF and UHF capability "It was always intended that transmissions

on VHF Channel 0 would be an interim step to allow people to receive it first on VHF and have time to learn about reception of Ultra High Frequency signals

As it is proposed that prospective new developments - such as supplementary licences. RSTV services and public television - could be established on UHF the Government considers it is time that existing and new multicultural television services should be transmitted solely on UHF

Mr Duffy said that Channel 28 transmissions currently covered 96% of the population in the Melbourne metropolitan television area Recently completed work on the UHF serial on the Gare Hill tower in Sydney would ensure coverage similar to that of the other television channels in that city Extension of multicultural television to

Canberra Goulburn and Cooma in September/ October this year, and to other metropolitan centres over the next few years, would be solely in the UHF band The phasing out of Channel 0 is part of the

Government's policy to ensure the orderly development of use of the radio frequency spectrum, 'Mr Duffy said "The VHF band is becoming crowded as

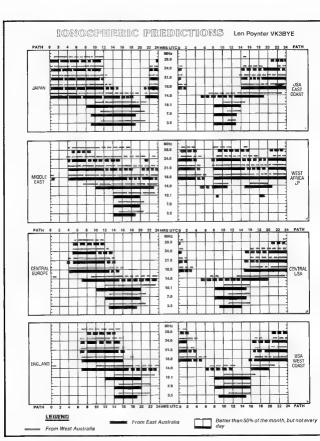
new FM radio stations join the increasing number of television stations using this band The result can be poor reception as one station interferes with another

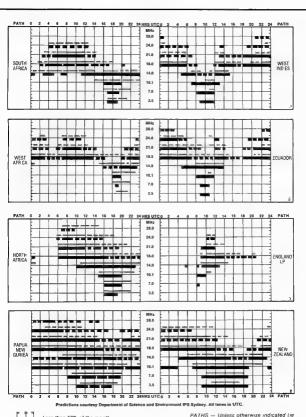
On the other hand, the UHF band is less crowded and can accommodate more tele-VISIOD SECVICES

Mr Duffy said UHF television provided extremely high quality reception, but viewers would have to ensure they had the correct receiving equipment. It was necessary for all sets to be connected to a special outdoor UHF

antenna via a low loss UHF cable Most modern television sets were equipped to receive LIHE change's Older VHE-only sets would require a small UHF/VHF down converter to allow UHF reception

The Minister said. Most households with the appropriate equipment will have no difficulty in receiving the UHF signals. The quality of both the picture and sound will be as good as that offered by stations in the VHF band."





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VK5MD

It is with deep regret we record the passing of -

MR CECIL KEITH BLANCH VK2GI

Obituaries

DICK BATY

Bick Baty, VK5MB became a silent key on 16th September, 1983, he was 70 years old. Born in 1913, he obtained his licence in 1931 with the callsign VK5MH. He had joined the Naval Reserve, and at the outbreak of war had to regretfully decline a position with the then School of Mines (now the Institute of Technology) as a Radio Instructor, as he was called into the Navy as a Warrent Telegraphist.

At the end of the war (1948) he left the Navy with the rank of Commissioned Telegraphist and loined the Commercial Broadcasting station 5RM. In 1949 he joined Philips Electrical Industries where he remained until his retirement.

Around 1985 he again found time to become involved with amateur radio and unable to regain his old callsion, took the nearest available which was VK5MB. A keen CW operator, Dick was active on the bands until only a few months before his death, despite an illness which for many years had left him a semi-invalid.

A member of the WIA and RNARS, possibly Dick's best known achievement was the winning of the 1934 Fisk Trophy for a six stage relay between states. (See '5/8 Wave' for September and November, 1982, also p 8 AR 1.2.35.) Bick presented the trophy to the division in July, 1982. and it is on display in the BGB.

Although Dick's passing has taken from us a well (iked and respected member of the fraternity. we would not have wished his continued suffering and can only be grateful that he sleeps peacefully at last.

Our sympathies are extended to his wife Bette and sons isn and Ashley.

Jack Coulter, VKSJK Jenny Warrington, YKSANW

VK2AIS

John's amateur operations began on 7th February, 1938 with a QSO on 80 metres with VK2AHC. Operating on HF and VHF, John pursued his interest in amateur radio up to the day of his untimely death on 10th July of this year.

JOHN GRAYDON

Most of John's working life was spent in the field of radio communications. A member of the permanent RAAF at the outbreak of war, he served through the war in many locations at home and abroad. He attained the rank of Flight Lieutenant in the Signals Branch.

In the post war years John Joined the PMG Engineering Branch and later the ABC. He worked on the technical side of radio and television in the

Sydney area. He retired from the ABC some few

To John's wife Gladys we extend our sincere Kelth VK2EKII (originally VK2TQ)

VK2MT CHARLES HEDLEY 1908-1983

It is with deep regret we record the passing of

Charles Hedley, VK2MT, Charles was first licenced in January 1933 and

maintained an active interest in amateur radio for half a century.

A CW enthusiast, Charles participated in the pionsering days of Australian radio communieations

Charles retired in 1973 from John Lysaghi (Aust) Ltd at Port Kembia where he was employed as a Planning and Scheduling Engineer following a career which began at the Lysaght Newcastle plant in 1929.

Since the death of his wife several years age. Charles, a quiet unassuming man, found comfort. and companionship through his church and through the amateur fraternity. An extensive traveller in his latter years.

Charles had visited and befriended amateurs in Hawaii, USA and Canada.

To his daughter, granddaughter and son-in-law we share our feelings of sympathy.

Barry Hartley, VK2FE

BON W HOLLAND VK4AO Ron, VK4AQ, passed away on 30th September this year. Ron was been on 8th June, 1914, and due to the war, he had to wait until it finished before he could go on the air. He obtained his "licket" in September 1939. He suffered considerably, during the latter part of his life.

He was a dedicated experimenter, and in his quiet way, was respected by all who knew him, Our condolences to his wife and family, VK4UX

MRS GENE TREBILCOCK

Victorian members will be saddened to learn of the passing al Gene Trebllcock. Gene and her OM Eric operated the Victorian Inwards OSL Bureau for many years. Despest sympathy is extended to Eric and family.



All copy for February AR must arrive at PO Box 300, Caulfield South, Vic 3162 at the latest by the 3rd January, 1983.

MAMAING

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